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Health Care Financing Review

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Symposium on data in a capitated environment

Consumer information needs in a competitive health care environment

Managed competition in health care and the unfinished agenda

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Health Care Financing Review is published quarterly by the Health Care Financing Administration's Office of Research and Demonstrations (ORD). The Office of the Actuary (OACT) contributes the featured statistical report in each issue. The Bureau of Data Management and Strategy (BDMS) provides the health care financing trends data that highlight aspects of the Medicare program.

The Health Care Financing Administration (HCFA) was established to combine health financing and quality assurance programs within a single agency. HCFA is responsible for the Medicare program, Federal participation in the Medicaid program, and a variety of other health care quality assurance programs.

The mission of the Health Care Financing Administration is to promote the timely delivery of appropriate, quality health care to its beneficiaries—approximately 50 million of the Nation's aged, disabled, and poor. The agency must also ensure that program beneficiaries are aware of the services for which they are eligible, that those services are accessible and of high quality, and that agency policies and actions promote efficiency and quality within the total health care delivery system.

The Office of Research and Demonstrations conducts studies and projects that demonstrate and evaluate optional reimbursement, coverage, eligibility, and management alternatives to the present Federal programs. In addition, ORD examines the impact of HCFA programs on health care status, utilization, and expenditures, as well as their effect on beneficiary access to services, health care providers, and the health care industry.

The Office of the Actuary directs the actuarial program for HCFA and monitors national health care expenditures and prices. OACT also provides analyses on the costs of current HCFA programs and the impact of possible legislative or administrative changes in the programs.

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Health Care Financing Review

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December 1986

Editorial policy

The editorial policy of the *Health Care Financing Review* is comparable to that of other professional journals. The Executive Editor decides which of the submitted articles are relevant to the health care financing field in general and to the Health Care Financing Administration in particular. *Review* readership is encouraged to submit appropriate manuscripts for consideration.

The Associate Editors manage the peer review process and are responsible for the professional quality of *Review* articles. All articles of interest are sent to a panel of peers with expertise in the subject areas addressed, and they review articles in terms of substance, originality, validity, clarity, and significance. Their comments, along with those of the Associate Editors, are transmitted to the authors. Authors whose manuscripts are accepted for publication may be asked to make revisions based on these critiques.

The Managing Editor has responsibility for the publications standards of the *Review* and the editorial quality of the articles published, and the editorial staff work with authors on preparing their articles for publication.

The *Review* is published on a quarterly basis and each issue represents a balance between contributors from inside and outside the government. Some selective scheduling for publication is necessary because more articles are usually accepted each quarter than can be published in any given issue. However, we will publish all articles of interest that are accepted through the peer review process as space is available.

Preface

The *Health Care Financing Review* is published quarterly by the Health Care Financing Administration (HCFA). It features research articles and statistical reports on major issues relating to the delivery and financing of health care services. At the end of each year, HCFA also publishes an annual supplement of the *Review* which is devoted to a special topic of interest.

Some months ago, as we were planning the 1986 Annual Supplement, we knew there were several emerging themes in health care that we wanted to recognize. First, the rapid changes in the way health care is being delivered had to be acknowledged. In just a few years, a variety of new health delivery systems had become a part of mainstream medicine, i.e., health maintenance organizations, competitive medical plans, and preferred provider organizations. These alternative systems, which helped to foster competition in the marketplace, were designed to constrain the costs of providing quality health care and, for the first time, they offered new choices to general health consumers as to the health coverage that was best for their families.

In tandem with this theme was our wish to recognize current efforts to position the Medicare and Medicaid programs within a competitive health environment so that our beneficiaries and recipients also could choose for themselves a health care plan that best suits their individual needs. Last year, for the first time, Medicare beneficiaries were allowed to opt out of traditional Medicare coverage and join private health maintenance organizations or competitive medical plans.

Medicare beneficiaries are joining such plans in increasing numbers, finding that they provide convenient, comprehensive, "one-stop" health care coverage which they cannot get through the traditional Medicare program. In addition, many plans offer extra benefits, such as eye examinations and prescription drugs, that are not covered by Medicare.

It is our intention that freedom of choice be increased for all parties within the medical community—that is, doctors, hospitals, and beneficiaries. Under a capitated Medicare program, there would be competition between the standard Medicare program and private health plans. Private health plans would compete vigorously with each other. Doctors and hospitals, as well as beneficiaries, would be free to choose their plan affiliations. Under a capitated system, choices would be made at the local level by the people best qualified to make them. Competition among the different plans should keep costs low and quality of care high.

This issue provides a forum for describing the changes that have taken place in health care delivery and discussing the future of Medicare policy reform. A variety of articles on many of the important issues in today's changing health care environment are included. HCFA's efforts to stimulate capitation approaches within the Medicare and Medicaid programs are described. The efforts of employer groups to promote capitation and competition are reviewed. New pricing strategies and rate adjusters under capitated delivery systems are detailed as well. Quality of care issues in Medicare and Medicaid capitated programs are also addressed.

We believe that the need for information is critical in this changing health environment. Expanded choices for health consumers and health providers result in increased responsibility for individuals to make informed decisions. Therefore, we have included an article on consumer information needs in a competitive health care environment and have presented a symposium of views on the data needs of plan administrators. The issue concludes with an article on managed competition in health care and the unfinished agenda.

The *Review* wishes to express appreciation to all our contributors to the 1986 Annual Supplement for their unique perspectives and diversity of ideas on this important topic.

Judith B. Willis
Executive Editor

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The future of Medicare policy reform: Priorities for research and demonstrations

by Allen Dobson, John C. Langenbrunner, Steven A. Pelovitz, and Judith B. Willis

The Medicare program, the largest health insurance program in the United States, is clearly at a crossroads as it enters its third decade. Historical increases in health care expenditures, plus a changing political and economic landscape, have set the groundwork for policy reform. Basic reform strategies, most notably reimbursement arrangements, are discussed. In 1983, Congress enacted the prospective payment system (PPS), which initiated a fundamental change in the way hospitals are paid for care delivered to Medicare beneficiaries. But PPS is only a steppingstone to broader reforms such as capitation and evolving organizational models in the delivery of care. Policymakers' considerations of coverage of services, such as long-term care and organ transplants, are also discussed. Within the context of these policy reforms, the authors shape an agenda for research and demonstrations—the blueprint for taking us from "here to there."

Overview

Introduction

Most western industrialized nations have reached a crossroads in the financing of health care. The United States is no exception. This is most evident with the Nation's largest single health insurance program, Medicare, which serves nearly 30 million elderly and disabled citizens. Last year this program, along with its sister program, Medicaid, marked the 20th anniversary of its original legislation. As a provider of payment for care to some of the Nation's most vulnerable and needy citizens, with an annual Federal budget exceeding $75 billion, the importance of Medicare and the magnitude of its impact are perhaps unparalleled in U.S. health care legislation.

Medicare was established as a federally administered program with uniform benefits for people 65 years of age or over, who were identified as having the greatest need for health care services, the least private health insurance coverage, and the least income to pay for services. Later, in 1972, Medicare was expanded to cover two additional high-risk groups: the disabled under Social Security and individuals with end stage renal disease (ESRD). There is no doubt that during the past two decades the Medicare program has done much to reduce financial barriers to access to state-of-the-art health care services for these population groups. By any measure, the millions of beneficiaries served by this program are better off today than they would have been without it. Not surprisingly, the program has received extraordinary and consistent public support, with more than 90 percent of those surveyed agreeing, time and again, with Medicare's purposes and policy goals.

But, along with the program's successes, a number of questions about its future have developed, given the changing economic, social, and political context in the United States during the last two decades. Although the Medicare program improved access to care for beneficiaries from the beginning, Medicare could not escape the criticisms of spiralling costs and the many perverse incentives created by its retrospective cost-based reimbursement mechanisms. By the late 1970's, the growing expenditure trends and the changing demographics (an increasing proportion of the U.S. population 65 years of age or over) combined to endanger the solvency of the Medicare Trust Fund. The rapid increases in expenditures for the Medicare program, as well as health care services in general, constrained the ability of the Federal Government to fund other health and social programs. To a certain extent, the growth in expenditures also endangered the Nation's overall economic productivity.

At the same time as health care expenditures were escalating, some say uncontrollably, the political landscape began to change dramatically. The national mood brought calls for fewer taxes, for reduction of budgets, and for deregulation of market sectors, such as transportation and health. This conviction of less general involvement by Government was reinforced by mounting public pressures surrounding growing budget deficits; Medicare, like other Federal programs, increasingly competed with more global policy objectives. In the space of a few years, the Nation moved from an era when health care was considered a right for all citizens to an era when cost considerations became the dominant issue.

A marketplace context

Health care cost containment is perhaps the most difficult of contemporary social issues. The health care system includes many individuals and organizations with competing goals and objectives. The interplay of public policies and this complex web of actors often produces unintended consequences. However, a number of principles or guidelines can usefully frame the policy options before us. First, Medicare will continue, as it has from the beginning, to "buy into," rather than displace, the existing health marketplace. In a culture that values

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individualism, pluralism, and diversity, the flexibility of marketplace solutions will be pursued. This will assure the richness of diversity in health care institutions, comparable with that observed in housing, education, transportation, and other sectors. Second, Medicare will further promote the primacy of local decisionmaking and consumer choice over centralized regulatory approaches. Third, Medicare can be best understood in the context of the larger development and evolution of the private health care marketplace. If, for example, multihospital chains and prepaid health plans serve increasing numbers of health care consumers, Medicare can be expected to mirror this shift. Similarly, as clinical practice patterns shift to alternate settings (e.g., outpatient versus inpatient), Medicare can be expected to structure its payments accordingly.

At the same time, as the largest single payer of medical care services, constituting nearly 30 percent of the Nation's expenditures on health care, Medicare outlays affect the larger medical marketplace. For example, when Medicare coverage is extended to new technologies, the infusion of program dollars often propels the technology's further utilization and diffusion. Medicare's impact on the marketplace is unavoidable, and must be considered in the development of Medicare policy.

Medicare program objectives will be achieved, then, only through a subtle balancing act that includes changes within continuity. For example, program expenditures must be contained while maintaining responsiveness and access to needed medical care for beneficiaries. Correspondingly, broader social goals of greater efficiency and equity must be attained within the structure of the existing health care marketplace and local decisionmaking.

These objectives and goals are achievable through timely research and demonstrations that identify and refine the most promising of policy options, and through the structuring of four basic reform strategies:

- Reimbursement arrangements.
- The mix of program benefits.
- Eligibility requirements.
- Program-funding mechanisms.

The first approach has been utilized most during the last decade, and, correspondingly, it holds the greatest promise for future reform. Research and demonstration efforts continue to identify the relative strengths of this strategy in planning and developing the program's future. The following discussion emphasizes this approach.

Reimbursement arrangements

Historical perspective

When the Medicare program was created in 1965, it borrowed from models of existing health insurance practices of the day. Medicare adopted the practice of paying hospitals retrospectively, according to their costs, and of paying physicians according to a customary, prevailing, and reasonable charge method. To deal with the health care providers, fiscal agents were given the major responsibility for reimbursement and auditing services. This reliance on existing insurance models promoted rapid implementation of a program developed to reduce financial barriers, enabling and encouraging the Nation's elderly to gain access to mainstream high-quality care.

Program costs, however, began to spiral from the very first year of implementation, and continued unabated until only recently. Most observers agree that these dramatic changes in spending levels stemmed from several factors. One major factor was the substantial increase in demand for health care services, associated with Medicare, Medicaid, and other third-party payment. In addition, these third-party payment mechanisms insulated the individual from the direct consequences of the cost of services. Finally, the response of health care providers to these reimbursement methods was to provide nearly unlimited services. The net result was almost unbounded demand and supply of health care services in the United States.

As health care expenditures consistently increased, well ahead of the general rate of inflation, there was mounting pressure at the Federal level to develop policies to promote cost effectiveness and cost containment, while preserving access to care. In the search for solutions, every aspect of the health care system came under scrutiny, and a number of broad policy alternatives were advanced. For example, some minor tinkering with taxes, cutting eligibility and/or benefits, and increasing the direct costs to the beneficiary were among the options analyzed and debated. In the search for a "cure" to the underlying systemic problems, though, provider response to reimbursement methods has been most directly addressed in U.S. health care policy.

Initially, legislation was enacted that emphasized increased regulatory apparatus. The 1972 Amendments to the Social Security Act, for example, established the professional standards review organization (PSRO) program to review the care received by all federally funded patients. A major emphasis of the PSRO program was to eliminate unnecessary hospital days. Congress also established a network of health systems agencies (HSA's) with the responsibility of overseeing area-wide health planning and resource development. Certificate-of-need programs were implemented so that large capital expenditures could be reviewed.

In contrast to these regulatory programs, there were attempts to increase competition and general market efficiencies. The Federal Government encouraged the growth of health maintenance organizations (HMO's), which also promoted the use of preventive services and decreased the need for hospital care. New methods for paying hospitals were tested through demonstrations, with the primary goal of containing hospital budgets and capital growth. The reimbursement methods tested included incentive reimbursement schemes (sharing the savings at reduced costs) and prospective reimbursement mechanisms.

Some of these approaches were judged to be generally ineffective or inconclusive. Others were terminated or altered. The results of some of these innovations were slow to take hold; the results of others were too new to measure. But none of these policy changes, except one, proved completely satisfactory in containing costs. By the early 1980's, 10 years of research, evaluation, and experimentation had clearly established the utility of prospective payment mechanisms. In 1982, Congress took an initial step in this direction with incentive reimbursements under the Tax Equity and Fiscal Responsibility Act (TEFRA). This legislation set limits on Medicare reimbursements for hospital costs at the per-case level, and also placed a limit on the annual rate of increase for Medicare's reasonable costs per discharge. One year later, in 1983, recognizing its potential as a pragmatic and immediate solution to spiralling costs, Congress enacted the prospective payment system (PPS) for most inpatient hospital services covered by Medicare.

PPS, which established a national payment rate for hospitals based on diagnosis-related groups (DRG's), has been under way since October 1983, and is scheduled to be phased in during a 4-year period. PPS holds the promise of being a major structural change. Indeed, this aspect of "prospectivity" in payment (and the corresponding movement away from cost-based reimbursement mechanisms) is probably best viewed as a first step in a series of policy decisions intended to move Medicare from its position as a financer of health care to that of prudent purchaser of efficient, yet high quality care. Concurrently, PPS has dovetailed with private sector health care financing initiatives to increase overall market efficiency.

The effects of these public and private sector changes have already been striking. During the first year of PPS, for example, although the average length of stay was expected to fall, the actual decrease experienced was more pronounced than would have been projected, based on Medicare historical trend lines. Contrary to nearly universal expectations, admission rates under PPS have also fallen. Supply capacity has been affected; the number of short-stay hospital beds has fallen, and occupancy rates are the lowest since data have been available on this measure. Still, hospital profits increased during the first year of the new system, primarily because of the reduced lengths of stay and associated cost reductions (Guterman and Dobson, 1986).

From a program standpoint, the new system has not only stabilized outlays, but has enabled Medicare to predict annual increases in hospital expenditures. It has also pushed back, by at least a decade, concerns about Medicare Trust Fund solvency.

PPS in transition

Overall, the new system has demonstrated itself to be a driving force in an era of veritable revolution surrounding the delivery and financing of health care. That is not to say the new system is perfect, or even permanent. The implementation of a per-case payment system using DRG's was a bold step in providing an economic incentive to restrain resource use and maximize efficiency, without adversely affecting access or quality of care. However, making the system function smoothly now encompasses more than principles of insurance; it necessitates careful attention to details of the payment mechanism that influence the wider policy parameters. Although PPS has achieved initial success, it also requires important policy choices as the system evolves. For example, by how much should payment rates increase year by year to assure continued access to care? To what degree should wide geographic variations in prices paid across areas (e.g., urban versus rural) and within regions be reflected in future payment levels?

The new system also introduced a new set of immediate concerns, including finding methods for refining the system to take account of severity of illness as well as intensity of services rendered. Perhaps the most important concern relates to assuring access and quality of care. As continued fiscal pressures constrain payment levels, program efficiencies may no longer be possible. Because the instruments to measure production efficiencies are still blunt, though, the signposts marking unwanted program cuts and implicit rationing may not clearly appear. As a result, policymakers may need to arrive at more precise mechanisms and standards for quality assurance.

Medicare's research and demonstration initiatives have reflected this concern since the advent of the new system. Federal policymakers carefully monitor levels of quality and access to care through a series of internal studies that assess patterns of national utilization and expenditure data. In addition, Medicare's grant and cooperative agreement mechanisms have extended these analytic activities and fostered the development of more precise and sensitive indicators of high-quality care.

Other issues include finding payment methods for supporting portions of medical education, continued clinical research and technological innovation, and care for the medically indigent. As Rashi Fein (1985) has noted, the new competitive marketplace has made the "implicit explicit." That is, the cross-subsidies and cost-shifting policies of the past, phenomena uniquely rooted in the American health care system, are disappearing. This has led to a dilemma about how to handle these and other nonmarket items that are not clearly under reimbursement formulas for patient care, but nonetheless are greatly influenced by them. The situation of uncompensated care, for example, is instructive. Depending on the particular estimate, somewhere between 20 and 40 million citizens in the United States have either no health insurance or inadequate insurance to cover their individual medical care costs. In the past, providers, such as hospitals, have been willing to absorb a great percentage of the unpaid bills. The more competitive markets appear to reduce the amount of the uncompensated care institutions can provide without additional sources of revenue. This issue, along with others perhaps, will need to be addressed during the next decade.

Lastly, payment reform must be extended beyond hospital services if Medicare is to contain costs over the long term. Payment for post-acute services, such as care in skilled nursing facilities (SNF's) and home health agencies (HHA's), will need to be modified. In addition, although services by physicians are only 20 percent of all health spending, physicians account for more than 70 percent of expenditures. Physicians' decisions on use of hospital services, diagnostic testing, and so forth, are critical determinants of overall health expenditures (Davis and Schieber, 1984). Because the rate of growth of overall Medicare reimbursements during the last two decades has proven to be as inflationary as inpatient hospital care, general agreement has emerged that physician payment under Medicare must be changed. Possible reform alternatives under consideration have been the development of fee schedules and relative value scales for physician services, as well as more general prospective payment mechanisms.

However, many have argued that these physician and other provider reform approaches are, perhaps, more appropriately viewed as impediments to the overall objective of Medicare payment reform. Although PPS has redirected the hospital industry, it may be most effective as an intermediate step to a more permanent solution that would extend across all providers and settings. Continued cost pressures from an aging population have further demanded timely consideration and development of a more long-term approach. Such reform is likely to be based on more competitive strategies that use capitation as the basic payment mechanism. Under this reform, the objective is to have a single capitated arrangement encompassing physician, hospital, and other Medicare-covered services.

Beyond PPS: Moving to capitation

Enrollment by Medicare beneficiaries in capitated payment systems and prepaid health plans, such as HMO's, has occurred for several years, but until recently the numbers were very small. In 1981, about 595,000 Medicare beneficiaries (a little more than 2 percent) were enrolled in such plans. In addition, services for these beneficiaries were paid on a retrospective, cost-reimbursement basis. The 1982 TEFRA legislation, though, included prepayment and other provisions to encourage enrollment in HMO's and other competitive medical plans (CMP's). By 1985, the number of Medicare beneficiaries enrolled in risk-based HMO's and CMP's had effectively gone from zero to more than one-half million.

The appeal of capitated payment systems stems from the incentives for efficiency (and the assumed cost savings that result) when the health care provider receives the following:

- A single price.
- In a defined period of time (e.g., 1 year).
- For one person (or each person enrolled).
- With a known set of benefits.

Furthermore, capitated systems hold the promise of injecting greater competition into the health care sector, which in turn could constrain health care costs. If individuals are offered incentives to choose efficient, less costly health delivery plans, then providers will compete for enrollees. Competitive capitation approaches are seen as "all-win" situations; that is, they hold potential advantages for all of the actors: the beneficiary, the provider, and the payer. For example, the beneficiary is typically offered a broad choice of plans and lower copayment provisions than under fee-for-service, and can receive superior management and continuity of care. Providers, on the other hand, are less restrained concerning the organization and delivery of care, and have generally greater freedom in determining the appropriate mix of technologies, the balance of preventive and curative services, and the service-delivery mix. In addition, capitated payment systems allow the provider to retain any surplus of revenues over cost. Lastly, purchasers of care benefit from capitation in that expenditures not only are reduced because of fewer hospitalizations, but expenditures become fully predictable, allowing better management of program resources.

In an effort to promote competition in Medicare and within the health care system, demonstrations of various capitated approaches are projects currently under development. These approaches include systems for capitating retirees by employers, unions, and pension fund managers; participation by non-TEFRA prepayment plans; and testing of organizational models that assume partial risk for benefits on a capitated basis. A model of particular interest is one in which an employer, union, or health and welfare fund manager would contract with the Federal Government and underwrite the costs of medical care for all of its Medicare-eligible retirees for a fixed dollar amount per person. These organizations would negotiate and/or bid with the Government to establish the fixed price and contract terms (e.g., time period, risk). General guidelines for demonstrations of these organizational models would allow beneficiaries to continue to obtain benefits through the traditional Medicare delivery system or to elect to enroll in alternative arrangements, such as HMO's or preferred provider organizations (PPO's). These organizations at risk may operate more efficiently, not only in relation to the alternative delivery systems within their project, but also in the administration of the fee-for-service part of their system.

Another important demonstration priority involves the State Medicaid programs. Capitated arrangements are becoming more prevalent as a mechanism for States to purchase and/or finance health care under the Medicaid program. Such arrangements can include counties, health-insuring organizations, or other prepaid organizations. A critical issue here will be the extent to which particular payment models are successful (and why), particularly as a richer diversity of capitation arrangements are established across populations and regions.

These demonstrations will rigorously examine quality, beneficiary access, and out-of-pocket liability, as well as cost effectiveness of service provision. Currently, ongoing evaluations of both the existing Medicare and State Medicaid capitation demonstrations, as well as the HMO's and CMP's operating under TEFRA, have received careful attention. In the move toward capitated systems, these evaluations are helping, in specific ways, to guide the special needs of evolving organizational models. For example, a crucial concern is beneficiary impact. Thus far, it would appear that beneficiaries who have enrolled in HMO's or other types of alternative health plans have been satisfied with their selection. Assessments of beneficiary satisfaction will remain an integral part of testing and monitoring other capitation models.

In moving toward fully capitated systems under Medicare, though, at least three major issues must be confronted. The first is to adequately develop the technology to determine capitated payments, reflecting differences in health status and potential use of resources. This allows for control of favorable or unfavorable selection practices on the part of both providers and beneficiaries; thus, the competition is on the basis of efficiency rather than unfair market advantages (Eggers, 1980).

Presently, Medicare's price for risk-based TEFRA HMO's and CMP's is based on the adjusted average per capita cost (AAPCC). This measure has undergone much scrutiny, and undoubtedly will undergo further examination. We need to be assured that the established payment is accurate, reliable, and equitable for both the Government and the providers. Several research and demonstration projects are testing various health status refinements and modifications to the AAPCC. These projects will determine the extent (if any) of selection bias in the enrollment process and whether the AAPCC can or does adjust for it. A continued challenge in using the AAPCC to set capitated rates is that over time it will be increasingly difficult to establish payment rates based on fee-for-service market prices. As the percentage of beneficiaries receiving services in a fee-for-service setting continues to decrease, the utility of those data to set prices will also decrease.

The second major issue is the delineation of the extent of the Government's responsibility for quality assurance in a system, which may have incentives for underprovision of care, especially for high-risk beneficiaries. The third relates to the previously discussed geographic variations in Medicare reimbursements across areas and within regions, and the extent to which these differences should be taken into account in future payment formulas.

Related to these last two issues are newly emerging areas for research and development; these areas will focus on the type of data collection efforts that should be initiated to examine and monitor a new system and its evolving organizational models. This is true both from the perspective of the individual beneficiary and the payer. The ultimate objectives of Medicare's competition strategy cannot be met without appropriate and accessible information for the consumer of care. To select alternatives best suited along individual needs, beneficiaries must understand available options, the specific benefits offered by each alternative, the price and out-of-pocket liabilities, and the comparability of these features across plans.

Likewise, the Medicare program as payer must identify those data elements necessary to assure appropriate oversight responsibilities. Federal data requirements will be largely defined by the pricing strategy and quality measurements implemented by the public sector. The ability to effectively establish prices and monitor quality will directly flow from the quality and type of data collected. In the ongoing redesign of Medicare, however, maximum provider participation must be encouraged, and data collection efforts should not impose unnecessary reporting burdens on any participants.

Finally, there is an emergent consensus about what can be expected or predicted under capitation in the short term. In general, greater competition, less hospitalization, and lower costs for beneficiaries and purchasers should be the norm in the early years. Observers disagree, though, as to whether pressures for cost containment will continue indefinitely or whether the new system will produce a "one-shot" reduction. One side of the argument is that the push of new and costly technologies will overshadow long-run gains in efficiency. Historically, this often has been the outcome with new programs undertaken for cost-containment purposes. As with PPS, though, the incentives underlying capitation may redirect drug and device industries to develop more cost-reducing technologies. In addition, the more intensified levels of competition in the marketplace, coupled with policy initiatives to make available information for consumer comparison shopping, could produce cost reductions indefinitely. A number of new and existing research and demonstration projects will attempt to isolate and measure individual facets of market behavior in each system.

Alternative strategies for reform

The success and promise of reimbursement mechanisms as a strategy for reform need not preclude alternative strategies. Other broad strategies, especially as they pertain to containing program costs, are to change benefits or alter program-funding sources. These strategies can apply to both public and private programs, and can complement reforms pertaining to payment approaches. For example, we have witnessed significant HMO innovations, reflecting their private enrollment experience, in benefit package design. By offering an appealing mixture of benefits and cost sharing, significant numbers of beneficiaries have left fee-for-service to enroll in HMO's and CMP's where there is less flexibility in provider choice. To date, HMO's and CMP's have also tinkered with the redesign of cost sharing under Medicare. Though remaining actuarially equivalent to costs under the traditional Medicare provisions, beneficiaries have reacted favorably to the new cost sharing.

Almost all HMO's and CMP's have offered catastrophic coverage for hospital care. As additional research and demonstration projects are initiated, testing the effects of changes in the Medicare benefit package will need to be considered. The flexibility available through capitated Medicare may prove more optimal than that under fee-for-service Medicare.

Similarly, program-funding methods could be especially important if the future heralds an extension and expansion of Medicare coverage. Given the general concern in the Nation about the aging of the population, one considered option has been the development of policies that will provide mechanisms for the financing and delivery of long-term care services. Medicare is an acute-care program, and the burden for providing payment for long-term care has traditionally fallen on Medicaid. Whether the program can carry this burden indefinitely, though, is far from clear. Currently, few of the aged have private insurance for nursing home care or for long-term care services in the home. Consequently, a majority of the aged face the risk of financial ruin and dependency from an extended long-term illness or disability that requires personal and nursing care services. The current financing dilemma is likely to worsen in the next three decades as the proportion of the population 65 years of age or over rises, although the extent to which the private long-term care insurance market could develop remains unclear.

Related to the funding issue is the lack of availability of appropriate and less costly community-based, long-term care services. The impaired elderly are likely to require personal care and support services as much as medical care services. Except in an institutional setting, the combination of such services often is difficult to obtain by those with long-term care needs. Most aged people with functional limitations prefer to remain in the community and to maintain their independence as long as possible. As a consequence, a major concern is that new approaches be found for caring for the needs of the elderly in the community (Gornick, et al., 1985).

A final area of coverage extension is new technology. As previously noted, PPS offers an opportunity to moderate the flow of new technology into the health sector. In the future, the Medicare program, nevertheless, can be expected to face some tough decisions relating to coverage of quality-enhancing, yet highly technological and costly, services. Only after several years of research, debate, and deliberation did Medicare approve coverage of heart transplants. Organ transplants generally provide the latest of examples of hard choices about who will pay and (possibly) who will receive.

Summary and conclusions

As the Medicare program enters the third decade, it is clearly in a state of transition. When Medicare was initiated in 1965, the health care marketplace rapidly changed from one of little, or no, cost concern to one where the escalation in expenditures forced cost and budget issues to dominate. By the early 1980's, though, there were indications that the spiral in health care outlays was beginning to end. The Medicare hospital prospective payment system is generally perceived to have contributed substantially to this event.

PPS has set into motion a set of payment reforms that have drastically altered the underlying behavioral incentives in the management and delivery of care. A seller's market has been transformed into a buyer's market. The Federal Government, along with other major private and public purchasers of care, has seized the initiative in deciding on the volume and mix of health care services and how much they will cost. This decade has witnessed less and less reliance upon traditional fee-for-service medicine and retrospective cost-based reimbursement principles. Instead, prospectivity is rapidly becoming the norm.

Changes in Medicare policy cannot stop here, though. As cost concerns diminish, efforts have redoubled, in this new environment, to assure access and quality of care for the Nation. Similarly, other lessons of the new PPS must help guide and structure the creation of more complete systems of prospectivity, such as capitation. Perfecting the set of payment incentives is also not only important for covering current benefits, but almost a prerequisite as new applications for care, as well as different types of care, are explored.

Within this environment, Medicare's research and demonstration agenda must focus on competitive health care delivery systems in general, with particular emphasis on those which would be paid on a capitated basis. The agenda also must be constructed in a manner that would complement and promote the continued growth of TEFRA risk contracts. Indeed, the previous discussion has delineated Medicare's research and demonstration program along the lines of several principal issues. These include the following:

- Quality and access.
- Pricing.
- Organization models.
- Beneficiary impact.
- Market behavior.
- Information needs.

In another 20 years, research and demonstration efforts in these areas will no doubt contribute, perhaps even lead, to a different health care system and a different Medicare program. The challenge will be to build not only a different program, but a better program.

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Capitation and the Medicare program: History, issues, and evidence

by Kathryn M. Langwell and James P. Hadley

This article reviews the history of capitation in the Medicare program and examines issues and research findings related to Medicare capitation. Specific capitation issues and related research findings reviewed include: the feasibility and extent of health maintenance organization participation in Medicare; plan marketing; beneficiary choice behavior; quality of care; and the use and cost of services. In addition, areas requiring further study are noted, and the potential for extensions of capitation under Medicare are explored.

Introduction

During its first decade, the Medicare program paid for services provided to beneficiaries on a retrospective fee-for-service or cost basis. By 1979, rapid increases in expenditures under the program created pressures to examine the payment mechanism and to institute alternatives that would create incentives to control escalating utilization and costs and, at the same time, enhance competition in the market for health services.

A major component of this change in reimbursement policy was the expansion of the Medicare program between 1976 and 1985 to permit beneficiaries to elect to obtain services through health maintenance organizations (HMO's) and competitive medical plans[1] (CMP's), which are paid prospectively, on a capitation basis, for providing the full range of Medicare-covered services to enrollees. Since January 10, 1985, when the Final Regulations were published permitting all qualified HMO's and CMP's to offer services to Medicare beneficiaries, nearly half of all the existing HMO's in the country have applied for Medicare contracts.

The full impact of the Medicare program's expansion to include capitated systems will not be known for many years. However, considerable information and early evidence are available to provide some understanding of the direction of the changes in the health care system that may result from current policy.

In this article, we review the history of Medicare's capitation contracting and the current status and terms of these contracts. We also discuss issues related to capitation under the Medicare program, review and assess evidence on these issues, and describe current research in progress that will provide additional evidence on these issues. These issues include:

- Initial feasibility and organizational experience of HMO's in the Medicare market.
- Marketing capitated systems and Medicare beneficiary choice behavior.
- Quality of care in capitated systems.
- Use and costs of services in capitated systems.

Finally, we indicate areas requiring further study, summarize the current and future status of capitation and the Medicare program, and indicate the potential for future extensions of capitation under Medicare.

History and current status of Medicare capitation

Early history

Between the enactment of the original Medicare legislation in 1966 and the present time, Medicare has offered a number of different contracting options to HMO's wishing to participate in the Medicare program. Although initially these options involved payment provisions that were based on the traditional benefit and cost-reimbursement philosophy of the original Medicare program, they have been expanded and have evolved over time to increase HMO participation in Medicare and to encourage beneficiary enrollment in prepaid plans.

Group practice prepayment plans (now called health care prepayment plans) were authorized under the initial legislation to contract with the Medicare program for the prospective payment of Part B services (medical and other professional services). However, payment to these plans, although prospective, is based on the projected costs of the plans and adjusted at the end of the year to equal 80 percent of reasonable costs (with beneficiary copayments making up the additional 20 percent of reasonable costs).

The Social Security Amendments of 1972 expanded the options for prepaid plans by allowing HMO's to enter into either cost or "risk-based" contracts with Medicare for the provision of both Part A and Part B benefits. Only HMO's that met all applicable Federal qualification requirements and had enrollments of at least 5,000 prepaid members were allowed to participate in these options. With either option, reimbursement was provided through interim monthly capitation payments, based on Medicare's estimate of

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[1] CMP's are organizations that offer prepaid delivery systems but are not federally qualified HMO's. For details on arrangements for CMP's in the Medicare market, see the *Federal Register* for Final Regulations, January 10, 1985.

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Figure 1

Total Medicare prepaid plan enrollment: United States, 1979 and 1986

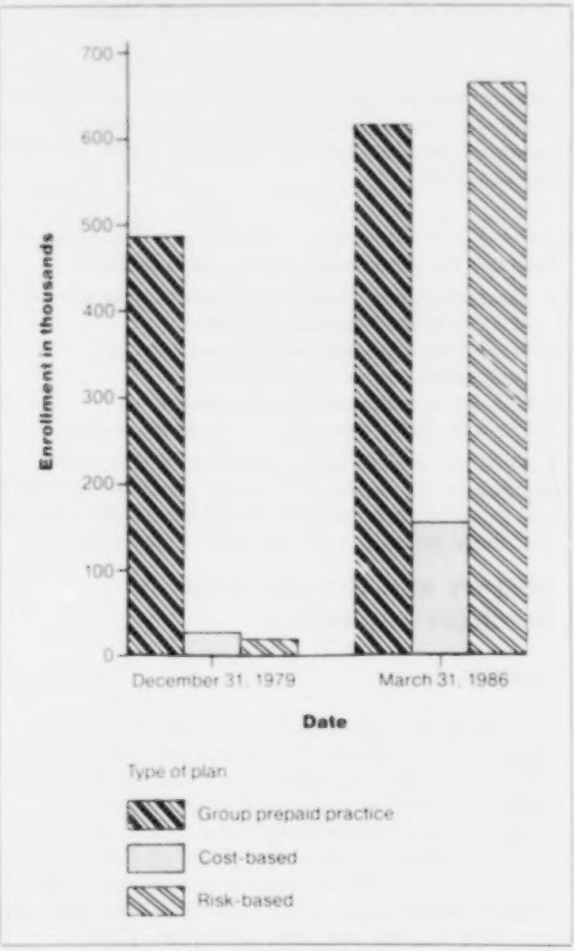
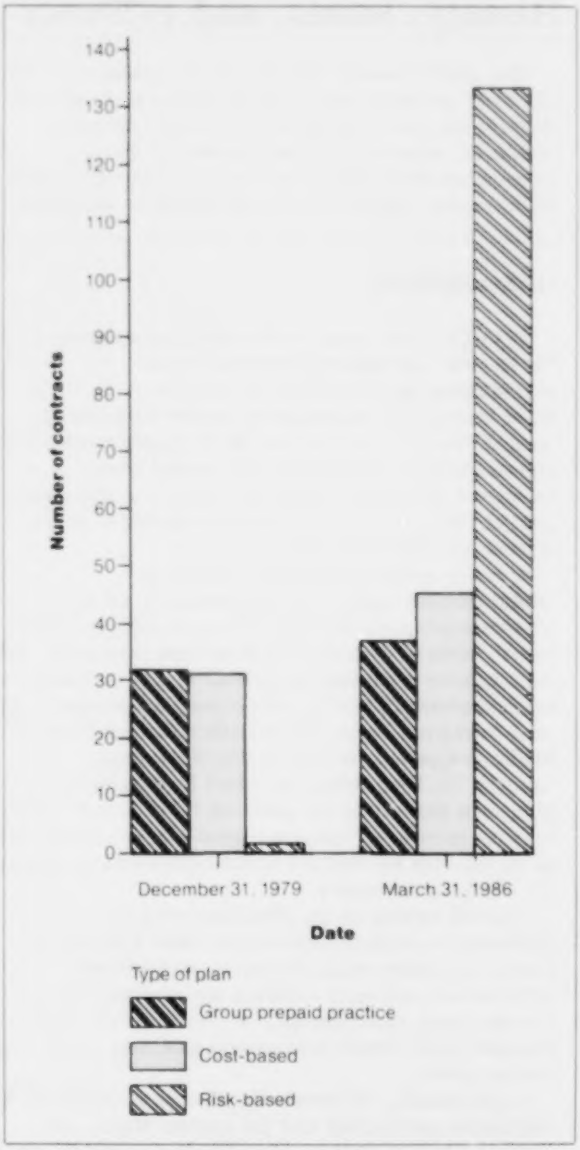


Figure 2

Total Medicare prepaid contracts: United States, 1979 and 1986



the plan's cost for providing services to its Medicare enrollees. For plans that chose the cost-reimbursement option, actual costs were calculated at the end of the contract period, based on cost reports submitted by the HMO's. As for group practice prepayment plans, prior reimbursements to the plan were then adjusted to reflect allowable and reasonable costs. For HMO's choosing the risk option, the HMO's actual costs were compared to a retrospectively determined adjusted average per capita cost (AAPCC), which represented what the Federal Government's costs would have been for the enrollees if they had been in the fee-for-service system. Under this risk arrangement, HMO's could share in savings (up to 10 percent of the AAPCC), but were required to absorb all losses.

As shown in Figures 1 and 2, by December 31, 1979 (13 years after the inception of the Medicare program), only 64 organizations, with a total enrollment of 527,521 beneficiaries, had signed contracts with the Medicare program. Thirty-two of these organizations were group practice prepayment plans (484,755 beneficiaries enrolled), 31 HMO's had cost contracts with Medicare (23,498 beneficiaries enrolled), and 1 plan had a risk contract with Medicare (19,268 beneficiaries enrolled). Medicare's relative lack of success in attracting HMO's to participate in the program, particularly on a risk basis, can be attributed to the fact that the contracting options offered by Medicare failed to provide HMO's with sufficient financial incentives. In addition, the retrospective cost-based reimbursement and cost-finding procedures used by Medicare differed substantially from the usual procedures of HMO's relying on prospectively determined rates.

Demonstrations of risk contracting

In order to test other methods of contracting that might contribute to increased HMO participation in the program, the Health Care Financing Administration (HCFA) solicited interest in and developed a series of demonstration projects to test alternative forms of HMO risk contracting. In the first of these demonstrations (the Medicare Capitation Demonstrations) eight plans began operations between 1980 and 1981. Various reimbursement models were tested using these plans, with reimbursements to individual plans varying from 85 to 95 percent of the AAPCC, and were linked to a number of risk-sharing arrangements (Trieger, Galblum, and Riley, 1981). Benefit packages of the plans varied, with all plans offering at least the standard Medicare package and some plans offering expanded benefits in return for an additional premium.

Encouraged by the response of both HMO's and beneficiaries to these demonstrations, HCFA in 1982 solicited HMO's and other alternative health plans for participation in a second series of demonstrations, entitled the Medicare Competition Demonstrations. Over 50 alternative health plans were qualified by HCFA to participate in this series of demonstrations. Because regulations were already being prepared to implement a national program (described later in this article) to permit HMO's and CMP's to enroll Medicare beneficiaries on a completely prepaid capitated basis, only 26 of these plans were permitted to become operational. The first of these plans became operational in 1982, with the majority of them becoming operational during 1983 and 1984. By the end of the 1984 calendar year, 117,000 beneficiaries were enrolled in the 26 operational plans.

In these demonstrations, most participating plans agreed to accept full responsibility and financial risk for providing Medicare benefits.[2] All plans received, for each enrollee, a prospective monthly payment from HCFA equal to 95 percent of the AAPCC. At a minimum, the HMO's had to provide the current Medicare benefit package. The HMO could provide benefits above this level and could charge a premium to enrollees. The plans retained full control over any savings generated by operating at costs below 95 percent of the AAPCC. These plans operated as demonstrations for periods ranging from 9 months to 2 1/2 years, with all but one of them converting to program status between April 1, 1985 and June 30, 1985.

The early experience of the risk demonstrations provided important information for the development of permanent risk-contracting arrangements. Three primary shortrun feasibility questions were addressed through these demonstration programs:

1. Would HMO's and CMP's choose to enter the Medicare market?
2. Would Medicare beneficiaries join HMO's and CMP's when these options were offered?
3. Do HMO's that enroll Medicare beneficiaries encounter significant operational problems in the initial enrollment period?

The shortrun answers to these questions provided considerable insight into the HMO market and the approach being taken by HMO's to the Medicare market.

Adamache and Rossiter (1985) have analyzed the factors associated with the decision (of individual HMO's) to apply to become a demonstration. The major finding of this study was that HMO's were significantly more likely to seek to enter the Medicare market if they were located in counties where the AAPCC level was high, indicating relatively high utilization levels in the fee-for-service sector. Since HMO's typically have experienced lower hospital use than is observed in the fee-for-service sector, a high AAPCC offers the possibility of successfully entering the Medicare market.

Clearly, the success of the Medicare program's investment in capitation relies on large numbers of beneficiaries choosing to enroll in HMO's. HMO's and prepaid practice are relatively new phenomena in many parts of the country and may be particularly unfamiliar to retirees who are less likely to have encountered an HMO option during their employed years. In addition, the elderly may be expected to have closer ties to medical providers and, therefore, to be less likely to join an HMO, even if benefits and costs are very attractive. If beneficiaries are to choose the HMO option, they must view the HMO alternative as filling a need, and HMO's must be able to successfully market their plans to beneficiaries.

In an analysis of beneficiary choice in four HMO's in Minneapolis/St. Paul, Minnesota that participated in the Medicare Capitation Demonstrations, Friedlob and Hadley (1985) found that beneficiaries who enrolled in the HMO's were less likely to have had "medi-gap" insurance than beneficiaries who chose not to enroll, were less satisfied with their fee-for-service usual source of care than nonenrollees, and described themselves as healthier than nonenrollees. Benefits and costs were cited by beneficiaries as the primary reason for joining.

While HMO's have had a great deal of experience in developing strategies and techniques for attracting the general population to a prepaid option, marketing to the Medicare population poses new challenges. In an analysis of the Medicare Competition Demonstrations, Langwell et al. (1986) reported that Medicare HMO's in most markets considered Medicare supplemental policies offered by traditional insurers (e.g., Blue Cross and Blue Shield) to be their major competition and designed their benefit packages to be priced lower and/or to include benefits exceeding those offered by the traditional insurers. All these HMO's used a combination of mass marketing (e.g., television and newspaper advertisements) and individual marketing (e.g., telephone sales) to reach the elderly population. Low costs, good benefits, and a reduction in paperwork were the features most frequently stressed in marketing materials. The study found that plans with an aggressive marketing approach (television, billboards, and telephone sales techniques) were more likely to meet their initial enrollment targets.

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[2] An exception to this was a group of seven plans belonging to the American Medical Care Review Association (AMCRA) that had a unique risk-sharing arrangement with AMCRA, whereby AMCRA established a risk-sharing pool to which all participating plans contributed, and which would be used to limit any losses suffered by plans under the demonstration.

Of the 20 demonstration plans for which case studies were conducted, half had achieved their initial enrollment targets by the end of 1984. Average enrollment in these plans was 5,820, with enrollments ranging from a high of 49,035 to a low of 192.

The initial implementational and operational experience of these plans also provided useful information and guidance for many new HMO's and CMP's that were interested in entering the market under the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA). For example, in analyzing operational issues related to the Medicare market, Rossiter et al. (1986) found that:

- Medicare beneficiaries are older, have more conditions, and have more severe chronic disabilities than the population under 65 years of age.
- The Medicare market is not like the group insurance market. It requires, in many cases, new management and control systems that are tailored toward dealing with individuals who require more time and attention than other enrollees.

The difference in age and health status for the Medicare population is perhaps an obvious point, but it cannot be overemphasized. Nearly all the representatives of the demonstration HMO's and CMP's reported significant and sometimes unexpected effects on their operations from this new and different population of enrollees. Most of the demonstrations reported change and growth in facility requirements, including redesign of facilities to accommodate increased handicapped parking spaces, wheelchair ramps, and space for new departments associated with the health care of the elderly.

In some plans quality assurance committees conducted studies and medical audits of specific disease entities that were relatively more prevalent among the elderly. Several plans organized subcommittees from the quality assurance committee to develop new protocols for high-incidence conditions among the elderly, such as hypertension and arthritis. Utilization controls were strengthened and modified with an influx of new Medicare enrollees in a number of plans.

A major operational issue that arose during the demonstrations was the ability of HCFA's Office of Prepaid Operations (OPO) to process and maintain enrollment and disenrollment information on a continuing and timely basis. Since many of the demonstration plans offered continuous open enrollments, and Medicare beneficiaries were permitted to disenroll with 30 days notice, it was critical that OPO establish procedures and systems to facilitate this problem. Early difficulties generated significant criticism of HCFA's ability to process these data in a timely manner (U.S. General Accounting Office, 1985). In response to these concerns, in 1985 HCFA put in place CompuServe, a direct interactive enrollment system, that has substantially reduced delays in recording beneficiaries' status and has facilitated the rapid growth of Medicare risk-contracting under TEFRA.

The demonstration plans were converted to program status under TEFRA, which went into effect April 1, 1985. Under TEFRA, many of the concepts tested in the Medicare HMO demonstrations were put into effect on a program basis including, in particular, the AAPCC and the adjusted community rate (ACR) methodology, both from the Medicare Capitation Demonstrations.

In addition, HMO's and CMP's that had prior cost contracts with HCFA during the demonstration and under TEFRA regulations were permitted to convert one cost-contract enrollee for every two new risk-contract enrollees. The reason for this limitation on conversion was concern that the Medicare program may, on average, pay more per beneficiary under the TEFRA regulations than was being expended on behalf of these cost-contract enrollees in HMO's.

Payment methodology

Under the TEFRA regulations, payment to HMO's for each Medicare beneficiary is determined using two combined methodologies—the AAPCC and the ACR. The ceiling for payment is 95 percent of the AAPCC per beneficiary. There are 120 separate payment rates for each county in the United States. These rates take into account age, sex, disability status, Medicaid status, and institutional status.[3] The AAPCC is calculated annually by HCFA, based on national historical data on expenditures under the Medicare program for beneficiaries in each category, and is adjusted to the county.

Each plan must calculate annually the expected cost of providing Medicare-covered benefits to Medicare beneficiaries. These ACR calculations may use data on HMO experience with enrollees under the age of 65 years, adjusting for higher volume and intensity of services used by Medicare beneficiaries, or they may be based directly on experience with Medicare enrollees. In either case, the resulting ACR is then compared to the AAPCC. If it is less than the AAPCC, the HMO must convert this difference into additional benefits or reduced cost sharing for Medicare beneficiaries, or it may receive less than 95 percent of the AAPCC.

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[3] Beneficiaries with end stage renal disease (ESRD) are prohibited from enrolling in TEFRA HMO's. Beneficiaries who develop ESRD following enrollment are permitted to remain in the HMO, and the HMO is reimbursed at a special rate for these enrollees.

Both the AAPCC and the ACR have been criticized during the early years of Medicare HMO contracting. Major criticisms of the AAPCC have focused on the sometimes significant variations in payment per county that occur from one year to the next and on the fact that the AAPCC does not directly take into account health status or prior use under the Medicare program.

In addition, there has been much debate about the appropriate percent of the AAPCC that HMO's should receive. While 95 percent may result in savings to the Medicare program (in the absence of biased selection into HMO's), it may be exceedingly generous to HMO's that are able to achieve significant savings through utilization control and greater efficiency. Finally, there is also concern about the methodology for determining the AAPCC in areas where there is high Medicare HMO market penetration, particularly if biased selection is determined to be present.

Beneficiary and plan response

The response to the TEFRA risk-contracting option has been quite positive from the standpoint of both plan participation and beneficiary enrollment. As of March 31, 1986, a total of 119 plans had signed TEFRA risk contracts, with 556,191 beneficiaries enrolled. In addition, 64 additional applications for TEFRA contracts are currently awaiting approval.

As shown in Figures 1 and 2, the number of Medicare beneficiaries enrolled in prepaid organizations with risk contracts, and the number of risk contracts, increased dramatically between December 31, 1979 (prior to the HMO risk demonstrations), and March 31, 1986 (approximately 1 year after implementation of TEFRA).[4] The shift toward prepaid contracting that has occurred since HCFA first began experimenting with true prepaid capitation in the Medicare Capitation Demonstrations has resulted in an increase of almost 300 percent in the total number of beneficiaries enrolled in prepaid plans (527,521 enrolled as of December 31, 1979, compared with 1,428,309 enrolled as of March 31, 1986). If the health care prepayment plans (which cover only Part B benefits) are not counted, the figure is even more dramatic—an increase of over 3,000 percent. However, despite these increases, it is important to keep in perspective the fact that the movement of beneficiaries into prepaid plans is still in its infancy. As of March 31, 1986, the total Medicare population enrolled in some type of prepaid plan was 4.6 percent, with 2.2 percent enrolled in a prepaid plan with a risk contract.[5] Nationally, Medicare beneficiaries make up approximately 7.6 percent of total HMO enrollment.[6]

Some selected characteristics of the TEFRA risk contracts, which constitute the vast majority of both the total number of risk contracts and beneficiaries enrolled in risk contracts[7] are shown in Table 1. As indicated in the table, most of the plans are HMO's, with CMP's accounting for only 5.8 percent of the total number of contracts. The majority of plans are independent practice associations (IPA's), though interestingly, group model plans account for an almost equal percentage of total enrollment. It should be noted here that the large enrollment associated with the three network model plans is primarily accounted for by one south Florida plan which, as of March 31, 1986, had 140,595 enrollees.

Table 2 shows the percent of TEFRA risk plans that offer various extended benefits beyond those provided by standard Medicare. Table 3 indicates the number of plans within various premium ranges, the percent of plans with high-option packages (i.e., enrollees may elect to purchase expanded benefits for an additional premium charge), and the percent of plans that charge copayments for at least some benefits under basic and high-option packages.

Risk contracting: Issues and evidence

Although the Medicare program has moved to full-risk contracting with qualified HMO's and CMP's, there remain a number of issues that are of concern for the continued monitoring and refinement of the system. These issues include an appropriate rate-setting policy and the assurance of quality of care in capitated systems. In this section, we review the issues and evidence related to rate setting and quality of care. In the next section, research in progress related to these and other issues is discussed.

Use and costs of services

Much of the present controversy about capitation and the Medicare program revolves around determination of the appropriate payment methodology. The payment level must be sufficiently high to attract HMO's into the Medicare market. At the same time, the methodology must reflect differences among beneficiaries' expected expenditures. Otherwise, if biased selection occurs, the Medicare program may incur greater costs under capitation than it would have occurred had beneficiaries remained in the fee-for-service settings.

Of considerable interest, in addition, is understanding whether HMO's actually result in savings to the government and, if so, how those

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[4] Data from March 31, 1986, Office of Prepaid Operations, *Prepaid Contract Status Reports*.

[5] *1985 National HMO Census-Interstudy* and HCFA Office of the Actuary.

[6] Calculation based on Interstudy estimate of 18,900,000 HMO members in June 1985, National HMO Census.

[7] 64,015 beneficiaries are enrolled in nine demonstration risk-based plans and four pre-TEFRA-type risk contracts.

Table 1

Number and percent of TEFRA[1] risk plans and enrollment, by selected characteristics: United States, March 31, 1986

Selected characteristics	Number of contracts	Percent of total contracts	Enrollment	Percent of total enrollment
Total	119	100.0	566,191	100.0
HCFA Region				
I Boston	14	11.8	45,832	8.1
II New York	7	5.9	19,686	3.5
III Philadelphia	7	5.9	13,013	2.3
IV Atlanta	9	7.5	172,194	30.4
V Chicago	34	28.6	170,868	30.2
VI Dallas	8	6.7	10,820	1.9
VII Kansas City	14	11.8	13,135	2.3
VIII Denver	5	4.2	3,074	.5
IX San Francisco	19	16.0	102,641	18.1
X Seattle	2	1.7	14,928	2.6
HMO/CMP:				
HMO's	112	94.1	557,521	98.5
CMP's	7	5.8	8,670	1.5
Model:				
IPA	68	57.1	174,419	30.8
Staff	23	19.3	78,656	13.9
Group	25	21.0	172,307	30.4
Network	3	2.5	140,809	24.8

[1] Tax Equity and Fiscal Responsibility Act of 1982.

NOTE: Percents may not add to total, because of rounding.

SOURCE: Office of Prepaid Operations: *Prepaid Contract Status Report*, March 31, 1986.

Table 2

Percent of TEFRA[1] risk plans offering expanded benefits as part of either a basic or high option plan: United States, March 31, 1986

Benefit	Percent of plans offering benefit
Extended hospital days	79
Extended skilled nursing facility days	41
Preventive care	86
Drugs	71
Eye care	69
Ear care	37
Dental care	14
Extended mental health care	34
Other additional benefits	34

[1] Tax Equity and Fiscal Responsibility Act of 1982.

NOTE: "Expanded" benefits mean benefits that are beyond those normally covered by standard Medicare.

SOURCE: Office of Prepaid Operations: *Prepaid Contract Status Report*, March 31, 1986.

Table 3

Percent of TEFRA[1] risk plans with various premium and copayment options: United States, March 31, 1986

Premium/copayment options	Percent of plans with option
Charges basic package copayments	71
Premium ranges for basic package:	
$00.00	16
Up to $20.00	29
$20.01-$37.60	40
$37.61 and above	15
Offers high option package	36
Charges copayment for items in high option package	81

[1] Tax Equity and Fiscal Responsibility Act of 1982.

NOTE: "High option package" refers to an optional benefit package containing benefits exceeding those in the basic package.

SOURCE: Office of Prepaid Operations: *Prepaid Contract Status Report*, March 31, 1986.

savings are achieved. Three sources of savings, in the absence of biased selection, may occur:

1. HMO's may reduce the use of services through case management and utilization controls.
2. HMO's may produce medical care more efficiently than do fee-for-service providers (e.g., through reduced duplication of services, use of less expensive personnel and resources).
3. HMO's may have sufficient local area market power to obtain deeper discounts from providers.

The sources and magnitude of savings achieved by HMO's may have significant implications for setting payment rates for HMO's. Changes in the payment methodology may have impacts that are detrimental to Medicare beneficiaries and to the Medicare program if they result in inappropriately strong reductions in utilization or in HMO's leaving the Medicare market entirely. Consequently, information on the financial performance of HMO's under current arrangements is a critical step in refining payment policy.

Evidence on biased selection

Biased selection is present when the mix of patients who join HMO's is systematically different from that of patients who remain in the fee-for-service sector, and that difference is related to health status and patient propensity to use health services. Biased selection is only a problem if the factors that distinguish enrollees from nonenrollees cannot be taken into account in setting premium levels paid for or by enrollees. For example, Medicare HMO enrollees tend to be younger, on average, than nonenrollees (McCombs, Kasper, and Riley, 1985; Nelson, Rossiter, and Adamache, 1986), and age is related to health status and propensity to use services. The fact that the AAPCC takes into account age differences, however, makes differential enrollment by age not a biased-selection issue.

The nature and extent of any biased selection of Medicare beneficiaries into HMO's has been investigated by Eggers (1980) and Eggers and Prihoda (1982). These two studies of biased selection are based on the experiences of HMO's operating under risk contracts. Eggers and Prihoda compared the preenrollment cost experiences of enrollees in three risk-based HMO's to that of nonenrollees in the same area. They found that total Medicare reimbursements over a 4-year preenrollment period were substantially lower for enrollees in all three plans.

They next examined the extent to which the differences in preenrollment costs could be accounted for by the actuarial adjustment factors included in the AAPCC. For each plan, the nonenrollee mean reimbursement level was adjusted to control for differences between enrollees and nonenrollees in the distribution across AAPCC rate cells. In two plans, the differences in preenrollment mean costs were reduced by this adjustment, but they remained substantial. This is consistent with the findings of an earlier study by Eggers (1980) for the Group Health Cooperative of Puget Sound. However, in the third plan, there was no statistically significant difference between the preenrollment costs for enrollees and nonenrollees following the AAPCC adjustment. This suggests that the nature of the selection process may vary among individual HMO's.

One factor that may account for the differences observed by Eggers and Prihoda is that the third plan included most of the providers in the area, so most beneficiaries did not have to switch providers to join. This was not true for the other plans studied, so these plans were likely to enroll a large proportion of beneficiaries who had no previous relationship with a provider and thus had lower prior health care costs.

The analyses of Eggers and Prihoda are based on the premise that prior use is a good predictor of future use. Thus, if the AAPCC adjustment fails to produce similar levels of preenrollment use, it is unlikely to provide a reliable way to control fully for inherent differences between enrollees and nonenrollees in their tendencies to use services after program startup. However, there are conflicting views in the literature over the issue of whether prior use is a good predictor of future use.

On the one hand, studies by McCall and Wai (1981) and Anderson and Knickman (1984) show that heavy users of Medicare-covered services in 1 year are much more likely to be heavy users in subsequent years, and that this effect persists for at least 4 years. McCall and Wai found that, of the 25 percent of beneficiaries with the highest reimbursements in 1975, about one-third continued to be in the highest quartile in each of the subsequent 3 years. Anderson and Knickman found that beneficiaries with expenses in excess of $5,000 in 1974 were six times more likely to have expenditures that were high in subsequent years than were other beneficiaries.

On the other hand, studies by Welch (1984) and Beebe (1985) have found evidence of substantial "regression toward the mean."[8] That is, although individuals with above/below average expenditures in one year are likely to be above/below average in subsequent years, the size of the disparity tends to lessen over time. Thus, enrollee-nonenrollee differences in prior use may overstate the effect of biased selection on the estimated impact.

Evidence on use and costs

Luft (1981) has completed an exhaustive review of the literature on the impacts of HMO's on the use and cost of services for the population under the age of 65 years. The evidence provided by past research indicates that the total costs of medical care (premiums plus out-of-pocket expenses) are lower for HMO enrollees than for comparable persons covered by conventional insurance plans. This differential ranges from 0 to 40 percent, depending on the characteristics of the HMO studied. The evidence indicates that the lower costs experienced by HMO enrollees are attributable primarily to a lower use of hospital services and that this is due largely to fewer admissions, rather than to shorter lengths of stay. Studies that have examined rates of hospital utilization in HMO's relative to the fee-for-service sector have found substantially different results depending on the type of HMO studied. Lower rates of hospital use of approximately 35 percent have been reported for group and staff model HMO enrollees, compared with 5 to 25 percent lower rates for IPA enrollees.

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[8] These studies were based on statistically simulated groups, not on groups of beneficiaries who actually enrolled in HMO's.

Unlike hospital care, where HMO's have strong incentives to reduce utilization, the incentives regarding ambulatory care are mixed. On the one hand, HMO's have an incentive to encourage the use of ambulatory care if such care can serve as a substitute for more expensive inpatient care. On the other hand, capitation payments provide a strong incentive to reduce the utilization of all services, including those provided on an ambulatory basis. In his extensive review, Luft found that the evidence on differentials between HMO's and the fee-for-service sector in the use of ambulatory services was mixed. While a majority of the studies reviewed found that HMO enrollees have a somewhat higher number of ambulatory visits, a substantial minority of the studies found the opposite result. However, an important pattern that emerged from these studies was that ambulatory visit rates tend to be higher among IPA enrollees than among other HMO enrollees.

The most significant study published subsequent to Luft's review has been that of Manning et al. (1984), who reported the results of a controlled trial in which a group of people previously receiving care in the fee-for-service sector were randomly assigned to receive free care from either a fee-for-service physician of their choice or from an HMO (the Group Health Cooperative of Puget Sound).

Because the HMO and fee-for-service samples were formed through a random assignment process, observed differences in utilization and cost were not contaminated by the effect of enrollee self-selection. This represents a significant improvement in methodology over previous studies. Manning et al. found that the HMO group experienced approximately 40 percent fewer admissions and hospital days than the fee-for-service group, although the number of ambulatory visits in the two groups was roughly the same.

Relatively few studies have examined the use and cost experiences of Medicare beneficiaries in HMO's. Edman and Weiss (1984) summarize the Medicare Capitation Demonstrations experience in case studies of the eight demonstration plans. Three of the four demonstration projects for which financial data were available suffered substantial losses in the initial period of operation. It is noteworthy that two of these plans were able to respond to these losses by changes in their utilization control methods and, subsequently, become financially sound.

Carpenter and Friedlob (1985) report on the rate-setting experience and fiscal performance of three of the Medicare Capitation Demonstrations. They indicate that initial financial losses were primarily the result of the lack of HMO utilization experience data for Medicare beneficiaries and the fact that these plans used data from the Kaiser plan in California (where hospital use is very low) to develop their projections. The authors suggest that, as HMO's generate use data for this group, future projections of costs prepared by Medicare HMO's should be improved and financial losses avoided.

A set of earlier studies, which examined the use and cost experience of Medicare beneficiaries in HMO's, has been reviewed by Luft (1981) and Trieger, Galblum, and Riley (1981).[9] These earlier studies are of limited relevance, however, because the HMO's were paid on a cost-reimbursement basis, rather than on a risk basis. In addition, the HMO enrollees retained their Medicare coverage for services rendered by outside providers. Despite the fact that the HMO's were not at risk, these studies generally found that total Medicare reimbursements were lower for beneficiaries enrolled in HMO's than for those in fee-for-service comparison groups. The lower total costs for HMO enrollees were attributable to lower reimbursements for inpatient care, although this was partially offset by higher reimbursements for physician services. The latter was due in part to out-of-plan use.

Another important avenue of research that has relevance to the experience of HMO's in the Medicare market concerns the level of service use and cost by beneficiaries in the period immediately preceding death. There is evidence that a substantial proportion of the health care expenditures for Medicare beneficiaries in the fee-for-service sector is for care received in the final years of life (McCall, 1984; Lubitz and Prihoda, 1984; Kovar, 1983). For example, using Medicare claims data for a sample of beneficiaries who died in the State of Colorado in 1978, McCall found that total reimbursements in the final year of life averaged over $6,000, compared to a mean of less than $1,000 observed over a comparable period of time for a randomly selected group of survivors. When the data were examined on a quarterly basis, it was found that over 60 percent of the expenditures for those who died were incurred for services rendered in the final quarter of life. This issue will be examined further in the ongoing evaluation of the Medicare Competition Demonstrations.

A recent study by Nelson, Rossiter, and Adamache (1986) has examined aggregate use and cost data for 1984 from 22 HMO's in the Medicare Competition Demonstrations. They report that hospitals' use rates were considerably lower in Medicare HMO's than were experienced in 1982 among Medicare beneficiaries in local market areas who received care from fee-for-service providers. However, this finding was not unexpected since HMO enrollees were younger and less likely to be institutionalized and Medicaid-eligible than were Medicare beneficiaries nationally.

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[9] The cited studies are Corbin and Krute (1975), Weil (1976), Goss (1975), and Densen et al. (1978).

In addition to examining hospital use rates for individual HMO's, Nelson, Rossiter, and Adamache also compared use rates among plans with differing characteristics. They report that IPA HMO's experienced higher use than did staff model HMO's and that plans with lowest hospital use rates were older, had higher non-Medicare enrollments, and had strong financial incentives facing HMO management. Nelson, Rossiter, and Adamache also analyzed the financial experience of the demonstration plans and reported that nearly half the plans experienced deficits for 1984 on their Medicare line of business. However, these deficits may reflect high initial startup costs that had not been fully amortized by year end 1984.

Clearly, aggregate data on use and costs of services can only provide an indication of the experience of HMO's in the Medicare market and are not fully adequate to assist refinement of policy on the appropriate methodology and payment levels for Medicare HMO's. Further research, using individual data over a longer timeframe, is necessary to address these essential issues.

Price determination issues

The existing evidence suggests that some HMO's may experience biased selection—either favorable or adverse—and that changes in the AAPCC methodology to reduce the financial impact of selection may be necessary. Research on prior use of care and regression to the mean points toward adjustments that may be appropriate. New research on biased selection and its nature in different types of settings is underway and will provide additional direction to rate-setting policy.

Similarly, the limited research currently available on use and costs of services in Medicare HMO's indicates that HMO's may be quite effective in reducing hospital days for Medicare beneficiaries. Costs may not be fully reduced by these savings from hospital use, due to equal or higher use rates for ambulatory services, lower cost sharing, and supplementary benefits provided to attract enrollees.

Quality of care

In capitated systems, the HMO and, in some cases, physicians, face incentives to constrain use of services. To the extent that overutilization has been a problem in this market, the reduction in use may be desirable and even result in higher quality care than has sometimes been provided under fee-for-service. However, if the incentives are excessively strong, Medicare beneficiaries may receive inadequate services. A critical issue for the long-run feasibility of capitation under the Medicare program is whether appropriate quality of care can be maintained and assured. The age and more fragile health status of Medicare beneficiaries makes quality an even more important issue than it is for younger populations. While Medicare beneficiaries may disenroll with relative ease if they are dissatisfied with care, it may not be within their capabilities to assess and respond to appropriateness of the quality of care they receive.

Research on HMO performance has not revealed, in general, deficiencies in quality of care (Luft, 1981; Cunningham and Williamson, 1980). However, some types of HMO's do appear to perform better on standardized comparisons of performance than do others (Rhee, 1983; Wolinsky, 1980). No research currently exists to provide evidence on the quality of care available to Medicare beneficiaries who enroll in HMO's under risk-based contracts.

An issue related to quality of care is Medicare beneficiaries' satisfaction with the health services they receive in Medicare HMO's. A study of the experience under the early Medicare Capitation Demonstrations found that Medicare enrollees reported a high degree of satisfaction with their decision to join an HMO. Between 81.5 percent and 91.5 percent of enrollees (depending on the HMO joined) reported they were very satisfied with their decision. These levels of satisfaction were comparable to or exceeded satisfaction reported by Medicare beneficiaries who were not enrolled in an HMO (Friedlob and Hadley, 1985). A similar research effort is presently planned under the evaluation of the Medicare Competition Demonstrations.

Future directions

Although the Medicare program has been examining capitation alternatives for nearly a decade, there are a variety of issues that remain to be addressed. In this section, we (1) highlight HCFA demonstration programs intended to extend and refine risk contracting, (2) describe research currently underway that will provide answers to many of these questions; and (3) discuss the direction of future capitation policy for the Medicare program, indicating several issues related to these new directions.

Current demonstrations

The implementation of TEFRA represents the current state of the Medicare program's development of prepaid contracting options. Medicare's approach to prepaid contracting, however, is still evolving. HCFA is currently testing and evaluating a number of refinements and variations to the TEFRA model in order to encourage more plans and beneficiaries to enter into prepaid contracts; make reimbursement more equitable for both the plans and HCFA; encourage HMO's to offer an even wider range of benefits and coverage options than they do under TEFRA; and assist beneficiaries in choosing among the expanded options available to them.

Demonstrations presently under way include:

- Two demonstrations testing the efficacy of an independent broker conducting coordinated open enrollment periods and marketing activities in an effort to assist beneficiaries in making enrollment decisions among various HMO's and the coverage options they offer.
- An HMO being reimbursed under a model that calculates reimbursement for beneficiaries based on the prior use of services (to test the possibility of refining the AAPCC by including prior-use variables).
- A demonstration to test the effects of setting the AAPCC at a lower level than 95 percent is being tested in an HMO that operates under arrangements identical to the Medicare Competition Demonstrations, except that it is being reimbursed at 85 percent of the AAPCC.
- A four-site demonstration of the social health maintenance organization (SHMO) concept, under which health and social services are integrated and placed under the direct financial management of the provider of services.

Research under way

The Medicare Capitation and Competition Demonstrations began in 1980 and 1982. During these demonstrations, and subsequently under TEFRA, much data have been generated to permit analysis of many of the important issues raised by Medicare risk contracting. Research under way within HCFA's Office of Research and Demonstrations and under HCFA-supported contracts will be completed in the near future.

Three research projects currently being conducted seek to expand HCFA's knowledge of consumer choice and HMO marketing:

- Mathematica Policy Research is analyzing data from a survey of enrollees of 17 Medicare HMO's and nonenrollees in the same market areas to examine the factors that are associated with the decision to join an HMO, including socioeconomic variables, prior insurance, prior sources of care and satisfaction, attitudes toward health care, and self-reported health status.
- A report from the evaluation of HealthChoice, a "broker model" demonstration located in Portland, Oregon, will be produced by Brandeis University during the latter part of 1986. This report will assess the impact of an information broker counseling Medicare beneficiaries regarding HMO options and performing analyses of the marketing, beneficiary enrollment, and HCFA costs of participating HMO's.
- Another study underway, to be completed by HCFA's Office of Demonstrations and Evaluations during spring 1987, will provide additional information on the stability of beneficiary enrollment decisions by examining beneficiary disenrollment patterns and trends.

Under HCFA's evaluation of the Medicare Competition Demonstrations with Mathematica Policy Research, three studies related to quality of care issues are being conducted (Luke and Brown, 1986):

- An analysis of the structure of the quality assurance programs in place in 20 of the Medicare Competition Demonstration HMO's.
- A comparision of the quality of basic care in general and for selected diagnoses between Medicare HMO's and fee-for-service providers in the same market areas.
- An analysis of patient satisfaction with health care and process for Medicare HMO enrollees and for a comparison group of Medicare beneficiaries receiving care from fee-for-service providers.

In addition, studies of use and costs of services by beneficiaries enrolled in three of the Medicare Capitation Demonstrations are being conducted by HCFA staff (McCombs, Kasper, and Riley, 1986).

Mathematica Policy Research, under its evaluation contract with HCFA, is conducting a comprehensive study of biased selection in 17 Medicare HMO's that were demonstration plans under the Medicare Competition Demonstrations. This study will use 2 years of Medicare claims data to examine prior use for 17,000 Medicare beneficiaries who enrolled in Medicare HMO's during 1984, and for 17,000 Medicare beneficiaries who remained in the fee-for-service sector during the same period. For a subset of these enrollees and nonenrollees, additional data on living arrangements, perceived health status and symptoms, care-seeking behavior, and attitudes toward health providers have been collected by telephone survey. These data will be used to estimate the nature and magnitude of biased selection into Medicare HMO's and whether selection varies by type of HMO or other organizational or market characteristics.

In addition, under the evaluation of the Medicare Competition Demonstrations, a comprehensive analysis is being conducted of use and costs of services provided over a 2-year period to individual Medicare beneficiaries enrolled in 12 Medicare HMO's and to a comparable group of beneficiaries in the fee-for-service sector. The primary focus of this analysis will be on estimating the impact of risk contracts on enrollees' use and cost of services, after accounting for biased selection, and on the methods by which HMO's achieve savings.

The Office of Research and Demonstrations is sponsoring several studies of the AAPCC methodology, including the feasibility of incorporating health status adjustments and examination of the lagged 5-year moving average methodology for calculating county adjustment factors. Most of these research activities will be completed in 1986 and 1987, providing HCFA with substantial information for refining the current

Medicare HMO program and for developing new directions for capitation policy.

Capitation in the future

Although the discussion to this point has focused on HMO's and CMP's, which provide a full range of Medicare Part A and Part B services directly to Medicare beneficiaries, there are a number of other extensions of capitation that have been suggested or are under consideration by HCFA.

First, a full-fledged expanded choice program under Medicare would permit beneficiaries to choose from a much wider set of insurance and delivery system alternatives, in addition to the HMO and CMP choices currently available. The Medicare Voucher Act of 1986, a bill introduced by Senator Durenberger in December 1985, would implement such a program. Under this legislation, organizations that currently provide insurance to retirees (e.g., employers and unions) would have the opportunity to manage the Medicare benefits for their members in return for accepting a capitation payment. Other organizations, such as private insurance companies, might also develop acceptable programs.

Second, another approach that has received attention recently is direct physician capitation (Pauly and Langwell, 1986; U.S. Congress (OTA), 1986; Langwell and Nelson, 1986), which would extend to medical groups and/or individual physicians the opportunity to coordinate and receive capitation payments for all services provided to Medicare beneficiaries who elect to participate in the program. Direct physician capitation would make it possible to expand capitation into areas with no HMO's, or where HMO capacity is significantly constrained.

HCFA's Office of Research and Demonstrations has sponsored a number of studies of issues related to capitation impacts that will provide information for the final determination of the nature of capitation policy for the Medicare program. It is worth noting that the President's Cabinet Council on Domestic Policy has recommended that the Department of Health and Human Services (DHHS) move toward testing and implementing a comprehensive capitation system that extends the present Medicare HMO program to permit capitation payments to other insurers and medical groups.

Conclusion

The Medicare program has included capitation as an integral component of its payment policy since early 1985. Capitation payments to HMO's and CMP's on behalf of Medicare beneficiaries have been demonstrated to be feasible, both in terms of logistics and the ability of HMO's and CMP's to attract and retain Medicare beneficiaries as members. Most HMO's and CMP's are able to provide all Part A and Part B Medicare benefits for less than 95 percent of the AAPCC and, therefore, can offer more generous benefits and reduced cost sharing to beneficiaries. Early evidence suggests that HMO's and CMP's are generating modest surplus revenues, even when providing more services.

However, there is concern and some evidence that some HMO's are benefiting from favorable selection (i.e., Medicare beneficiaries who tend to use fewer services are more likely to join HMO's). If so, then the Medicare program may be spending more for HMO enrollees than would have been expended had they remained in the fee-for-service sector. A HCFA study currently underway will provide considerable information on this issue by early 1987.

Quality of care in capitated systems is also a concern, because physicians face financial incentives to provide fewer services. There is little evidence that there are differences in quality for the population under the age of 65 years enrolled in HMO's. However, the Medicare population is more vulnerable to deficiencies in quality, and determining that capitation can provide lower cost but equal quality health care is a priority for HCFA. A HCFA study of quality of care in Medicare HMO's is currently underway, and results are expected to be available in mid-1987.

HCFA is currently discussing a number of expansions of the capitation concept to extend the positive incentives of capitation to a wider set of providers under the Medicare program. The experience, to date, with the Medicare HMO program strongly suggests that capitation is feasible and has the potential to be an effective mechanism for containing Medicare program costs.

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Overview of Medicaid capitation and case-management initiatives

by Deborah A. Freund and Edward Neuschler

Case-management programs have grown in number and in acceptance in the Medicaid program since 1981. In this article, we review their structure and incentives as well as what is known about their impact on cost and use.

These programs also have been difficult to implement, posing myriad management challenges for prepaid program managers and State administrators. We highlight the problems in the following areas: eligibility, enrollment, rate setting, and management information systems.

Introduction

Finding the most cost-effective means of delivering health services has become a principal concern of the Medicaid program. This concern has led to experimentation with competitive strategies that rely heavily on contracting with alternative delivery systems, including health maintenance organizations and other types of managed care programs. In this article we discuss the structure of Medicaid capitated managed care programs, the implementation experience, and early research results regarding their impact on cost and use.

Rationale for managed health care

Managed health care programs that include health maintenance organizations (HMO's) and health insuring organizations (HIO's) have been undertaken as one possible solution to the problems of high costs of care and lack of access to primary and acute care under Medicaid. Often cited (Freund, 1984) indicators of problems in Medicaid include the following:

- Lack of adequate access to primary care in many areas.
- Inappropriate use of expensive hospital emergency rooms for routine care.
- Indiscriminate "doctor shopping," resulting in too many tests, prescriptions, and unnecessary office visits.
- Excessive rates for inpatient hospital use by Medicaid enrollees compared with those for the general population, both in admissions and inpatient days per 1,000.

Clearly, many Medicaid beneficiaries lack a usual source of coordinated, ongoing care. Access to primary care services is limited in many low-income areas; and the most available provider, often the hospital outpatient department, has higher costs and is generally not structured in a way that assures appropriate coordination of care and an ongoing doctor-patient relationship.

These problems are generally recognized as contributing to cost increases in the Medicaid program; but it is important to note that the episodic nature of care, the lack of continuity in source of care, and the lack of preventive services also may indicate inaccessible or poor quality medical care.

To remedy both the cost and the access or quality problems, States have undertaken a variety of managed health care initiatives for their Medicaid populations. Whatever the specifics of the approach, the goals of these initiatives are to link Medicaid recipients with reliable sources of ongoing, coordinated primary care; to reduce unnecessary and inappropriate use of expensive inpatient and emergency room care, as well as excessive prescriptions and laboratory tests; and to improve access to both routine and urgent primary care. These goals are expected to be attained and program cost savings realized at the same time.

Legislative background

The development of the wide variety of managed care approaches under Medicaid has been stimulated by recent Federal legislative changes. In 1981, the Omnibus Budget Reconciliation Act (OBRA, Public Law 97-35) made a number of changes in Federal law that permitted a variety of alternative financing and delivery approaches to be developed within Medicaid. States now are permitted to establish their own qualification standards for HMO's serving Medicaid patients, and HMO's contracting with Medicaid are permitted to have up to 75 percent Medicare and Medicaid enrollment. Further, waivers of selected Federal Medicaid requirements were authorized under section 1915(b) to permit States to establish primary care case-management systems for their Medicaid recipients and to select Medicaid providers based on their cost effectiveness. These waivers include permitting States to limit freedom of choice of provider, modify payment arrangements with selected providers, and allow for operating Medicaid programs that are not uniform across the State.

Although most State Medicaid programs were familiar with the HMO concept, the newer approaches to managed health care were almost completely unknown and untried in 1981. Thirteen States have

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since used the new waiver authority to implement primary care case-management systems, and others have them under development. A number of States are aggressively pursuing expanded HMO enrollment of Medicaid recipients; and several others are pursuing prepaid approaches under the preexisting demonstration waiver authority. The growth in enrollment in managed care programs since 1981 is shown in Table 1.

Primary care case management

All the initiatives discussed in this article involve primary care case management (PCCM) directly or indirectly. This concept of managed care is in essence a coordinating and rationing strategy designed to make the unique gatekeeping role of the primary care provider the key to care management and cost control (Freund, 1986). In these programs, Medicaid recipients select a case manager—a physician or other primary care provider such as a clinic or HMO. The case manager provides primary care directly and, except in a bona fide emergency, must authorize in advance all other care received by the patient, including hospital or specialty care. The case manager must be available by telephone 24 hours a day, 7 days a week (or arrange for such coverage) to handle urgent care needs. The programs vary in the financial incentives they offer to case managers and other providers of care, in the organizational arrangements they use, and in the nature of recipient participation.

Managed health care under Medicaid

Combining three dimensions of variation (financial incentives, organizational arrangements, and recipient participation), five broad approaches to managed health care have emerged in the State initiatives undertaken to date (Neuschler and Squarrell, 1985).

Table 1

Growth in the enrollment of Medicaid recipients in health maintenance organizations and other prepaid health plans, by State: 1981 and 1986

State	Number of— HMO's[1] June 1981	Number of— PHP's March 1986	Approximate enrollment June 1981	Approximate enrollment June 1986
Totals:				
Plans	54	129	281,926	840,849
States	18	25	—	—
Alabama	—	1	—	828
Arizona[2]	—	16	—	119,237
California[2]	13	12	132,079	218,475
Colorado[2]	2	3	2,753	6,796
Connecticut	—	1	—	362
District of Columbia	1	1	501	110
Florida[2]	1	4	1,178	11,988
Hawaii	1	1	2,925	2,342
Illinois[2]	2	7	1,319	81,936
Indiana	—	1	—	2,237
Maryland	6	5	18,105	18,460
Massachusetts	4	8	4,117	4,744
Michigan[2]	5	7	59,241	90,128
Minnesota[2]	4	9	576	9,321
Missouri[2]	—	5	—	18,941
New Hampshire	—	1	—	369
New Jersey	—	2	—	1,001
New York	4	7	31,554	42,587
Ohio[2]	2	14	7,001	45,860
Oregon	1	1	5,715	6,253
Pennsylvania[2]	1	4	1,500	18,597
Rhode Island	1	1	186	217
Utah	1	1	5,662	9,178
Washington	3	3	6,601	6,240
Wisconsin[2]	2	14	913	124,642

[1] Plans with signed contracts, but no current enrollment have been excluded.

[2] This State and its data are used to highlight those States with significant enrollment growth.

NOTES: Data are for the 5 years after the enactment of the Omnibus Budget Reconciliation Act, Public Law 97-35. HMO's is health maintenance organizations. PHP is prepaid health plan.

The categories are not mutually exclusive, and some initiatives encompass multiple models. They are as follows:

- Continuation of the traditional fee-for-service Medicaid program, but adding the requirement that recipients select a primary care provider or case manager.
- Contracting out the operation of the PCCM system to a risk-sharing intermediary called a "health insuring organization" (or HIO) that is paid on a fully capitated basis.
- Contracting directly and solely with HMO's or other prepaid health plans (PHP's) on a capitated basis, and requiring that recipients choose among the available prepaid plans.
- Contracting, either by the State or by an HIO, with primary care providers (PCP's) on a partial capitation basis.
- Encouraging enrollment of Medicaid recipients in HMO's and other prepaid health plans (PHP's) and maintaining the traditional Medicaid system as an option.

We now briefly describe each of these variations.

Traditional fee-for-service Medicaid

Fee-for-service PCCM systems make the fewest changes in the traditional organization of the health care system. The Medicaid program requires recipients to choose and enroll with a primary care physician or clinic that then provides primary care directly and must give prior authorization for all inpatient care and referrals to specialists. Except in a bona fide emergency, services not authorized by the case manager are not reimbursable.

Some fee-for-service PCCM systems pay the case manager a small case management fee, typically $3.00 per enrollee per month, in addition to the standard payment for services the case manager receives directly. This serves to compensate the case manager for the extra effort involved in being available 24 hours a day and in coordinating all referrals. There are, however, no direct financial incentives to the case manager to encourage cost-effective care. Under this approach, the expectation of savings relies on case manager coordinating capacity, physician professionalism, prohibition against unrestricted use of hospital emergency rooms, and effectiveness of any utilization review and information feedback system the State may have established. The States that have adopted this approach are listed in Table 2.

Capitated health insuring organizations

A potential drawback of fee-for-service PCCM systems is that budgetary savings are not guaranteed, as they are under capitated arrangements such as HMO's. Because traditional HMO's often express reservations about serving the Medicaid population, Medicaid programs have used a health insuring organization (HIO) as a means of purchasing coverage from a third-party payer or fiscal intermediary for a monthly premium. Under Federal Medicaid regulations, an HIO is " . . . an entity that (a) pays for medical services provided to recipients in exchange for a premium or subscription charge paid by the (state) agency, and (b) assumes an underwriting risk." [42 Code of Federal Regulations 434.2]. Prior to 1981, the HIO option had been used only in Texas and in one area of California, and no new HIO's had been set up since 1972. The new flexibility to establish PCCM systems, granted by OBRA, made HIO arrangements both possible and more feasible.,

Practically speaking, to pursue the HIO-PCCM approach, a State establishes an organization (sometimes called a "health authority") that is not itself a provider of care, but that meets State insurance requirements and is willing to contract to pay for all or most acute care Medicaid services on an at-risk basis. The State then requests a waiver from the Health Care Financing Adminstration to permit the HIO to implement a PCCM system. The HIO subcontracts with the actual providers of care (primary care physicians and clinics, specialists, and hospitals) and pays them in a variety of ways, including fee-for-service, partial capitation, per diem, or by prospective payment based on diagnosis-related groups. Savings to the State and to the Health Care Financing Administration are virtually guaranteed, because the HIO is paid a fixed per capita rate that is less than the estimated equivalent costs under the fee-for-service system—often 95 percent. The capitation rate generally varies with the aid category covered under the HIO.

The combined HIO-PCCM approach has been successful in reducing costs in Santa Barbara County in California (Freund, 1984; Gibson-Kern, 1984) but a Monterey County plan, also in California, went bankrupt because of the lack of adequate utilization controls and a management information system (Garfinkel et al., 1985). The Citicare program in Kentucky served all Aid to Families With Dependent Children (AFDC) recipients in Jefferson County, Kentucky, from July 1983 until it was terminated by the State a year later for political reasons (Freund, 1984). Other HIO's that are under development or have recently begun operation are listed in Table 2.

It is significant to note that use of the HIO alternative has been severely restricted by the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 (Public Law 99-272), enacted April 7, 1986. This law now requires HIO's to meet the same requirements as Medicaid or Medicare contracting HMO's, including maintaining a non-Medicaid enrollment of at least 25 percent and

Table 2
Medicaid managed health care projects, by State

State	Program name	Recipient participation
Traditional Medicaid with primary care case management		
Operational:		
Colorado	Primary Care Physician Program	M
Connecticut	Middlesex Primary Care Network	M
Michigan	Physician Primary Sponsor Plan (Detroit, Wayne County)	M
Utah	Choice of Health Care Delivery: PCN or HMO	M
Kansas	Kansas Primary Care Network	M
	Patient Access and Care System (KenPAC)	M
Tennessee	Maury County Case Management Project	M
Tennessee	Memphis, Shelby County Pediatric Case Management	V
Prepaid capitation contracts with multiple HMO's		
Operational:		
Arizona	Arizona Health Care Cost Containment System	M
Missouri	Managed Health Care Project (Kansas City) (has small fee-for-service physician option)	M
Minnesota	Prepaid Medicaid Demonstration	M
New York	Monroe County MediCap Plan (Rochester)	M
Oregon	Capitated Physician Care Case Management Program (Portland)	M
Wisconsin	HMO Preferred Enrollment Initiative (Madison and Milwaukee)	M
Under development:		
California	Expanded Choice of Health Care Program (San Diego County, part of Los Angeles County (development suspended)	M
Ohio	Cleveland Health Care Alternatives	M
PCCM through health insuring organizations		
Operational:		
California	Monterey County Health Initiative (terminated early 1985)	M
California	Santa Barbara County Health Initiative	M
Kentucky	Citicare Primary Care Network (Louisville) (terminated June 1984)	M
Pennsylvania	Health PASS: Philadelphia Accessible Services System	M
Tennessee	Medicaid Plus	V
Washington	Kitsap Physician's Service Alternative	M
Under Development:		
California	San Matec Organized Health System	M
Connecticut	Hartford Health Network	M
Contracting with PCP's on a partial capitation basis		
Operational:		
California	Primary Care Case Management	V
Massachusetts	Competitive Managed Health Plans	V
Michigan	Capitated Ambulatory Plan (Wayne County, Kalamazoo)	V
Nevada	University of Nevada School of Medicine (Reno and Las Vegas)	V
New Jersey	Medicaid Personal Physician Plan	V
New York	Suffolk County Children's Medicaid Program	V
North Carolina	Capitated Gatekeeper with Incentive (Wilson County)	
Oregon	Capitated Physician Care Case Management Program (Eugene-Springfield)	V

NOTES: M is mandatory. V is voluntary. PCN is primary care network. HMO is health maintenance organization. PCCM is primary care case management. PCP is primary care physician.
SOURCE: National Governor's Association: Center for Health Policy Studies, 1985.

permitting disenrollment on demand.[1] HIO's have customarily been established to serve exclusively the Medicaid population. Enrollment in HIO's generally has been mandatory. Thus, in the future, HIO's are likely to find this enrollment restriction difficult to meet. Those HIO's already in operation are permitted to continue under the legislation.

Contracts with health maintenance organizations

A number of States are aggressively pursuing enrollment of Medicaid recipients in HMO's and other prepaid health plans, using their new authority to enroll Medicaid recipients in HMO's that meet State, but not Federal, certification standards. Wisconsin and Arizona are the primary examples of this approach. The Arizona Health Care Cost Containment System (AHCCCS) includes both Medicaid eligibles and non-Medicaid indigent families and individuals. Operating statewide, the program requires all eligibles to select a participating prepaid plan in those areas (Vogel, 1983; Freeman and Kirkman-Liff, 1985; Neuschler and Squarrell, 1985). Wisconsin requires all AFDC recipients in Madison and Milwaukee to select 1 of 14 participating HMO's.

Several other States have increased their Medicaid HMO enrollment by also instituting primary care case-management systems at the same time. For example, Colorado, Michigan, and Utah all exempt their HMO enrollees from the requirement to select a primary care physician, because the HMO plays exactly that role. Because of the implementation of its Physician Primary Sponsor Plan, Michigan has noted a more than 50-percent increase in HMO enrollment. The enrollment increase for Utah has exceeded 60 percent, and that for Colorado has been almost 150 percent.

Partially capitated providers

A number of States have established prepaid arrangements that are only partially capitated. Examples include the New Jersey Personal Physician Plan and the Michigan capitated Ambulatory Plan. Typically, under these programs, the primary care case manager receives a capitation payment that covers the basic primary-care services the case manager provides directly and, perhaps, laboratory and X-ray services. Hospital services are not covered under case manager capitation except in one of the demonstration projects. A variety of financial incentives can then be used to encourage the case manager to use inpatient and referral care judiciously. Usually, these involve some form of shared savings under which case managers receive a bonus if use of inpatient and specialist care by their enrolled patients is lower than expected. States using a partial capitation methodology are listed in Table 2.

Voluntary enrollment: Health maintenance organizations

A number of States are seeking to increase voluntary enrollment of Medicaid recipients in HMO's and other managed care alternatives without waivers. For example, Illinois recently used the OBRA-broadened Medicaid HMO definition to increase the number of prepaid plans available to Medicaid recipients in Chicago from two to seven. Enrollment has increased from about 1,300 before OBRA to nearly 82,000 as of March 1986.

Other States are actively seeking prepaid contracts with federally funded community health centers, many of which do not need to be formal HMO's in order to serve Medicaid patients on a prepaid basis. For example, Pennsylvania solicited community health centers for prepaid capitation arrangements, resulting in one new prepaid contract. Ohio, New York, and Pennsylvania have granted State funds to Medicaid providers, many of them community health centers, that wish to become HMO's. Missouri contracts with two neighborhood health centers under its demonstration. Ohio now has 14 contracting HMO's, compared with 2 before OBRA, and enrollment has grown from 7,000 to almost 46,000. (For similar State initiatives, see Table 2.)

One of the difficulties of increasing Medicaid enrollment on a completely voluntary basis is the lack of tangible incentives for Medicaid recipients to join prepaid plans. Illinois used a negative incentive by establishing several copayments in the traditional Medicaid program, including a $3 or $2 per day copayment for inpatient hospital care (National Governors Association, 1985). State Medicaid benefit packages are usually quite generous, making it hard for HMO's to offer additional services as an inducement to enroll. Because recipients do not pay any premium for their coverage, HMO's cannot attract Medicaid enrollees through lower out-of-pocket premium payments. One strategy often used by States is to offer 6 months or more of guaranteed eligibility to Medicaid recipients who elect to enroll in a prepaid plan and who agree to remain enrolled for the guarantee period. This eligibility-enrollment guarantee is seen as one of the few incentives available to encourage Medicaid recipients to enroll in HMO's.

Eligibility-enrollment guarantees serve another purpose as well. One of the difficulties prepaid plans have in accommodating Medicaid enrollees is their high turnover rate, resulting from a loss of Medicaid eligibility and from voluntary disenrollment. High turnover rates also tax State administrative resources. This high turnover means that HMO's serving Medicaid patients must market themselves aggressively and continuously just to keep their Medicaid enrollment from declining. Many are not willing to make this effort.

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[1] Recent legislative changes—Deficit Reduction Act (DEFRA) of 1984 and COBRA of 1986—have loosened the disenrollment-on-demand requirement somewhat. States may now establish 6-month enrollment periods for federally qualified HMO's that fully meet the 75-percent rule and for prepaid plans based at federally funded community health centers. Disenrollment for good cause must still be permitted at any time. Nonfederally qualified HMO's must still permit disenrollment without cause subject to one calendar month notice.

Recipient participation

Implicit in the five major approaches just outlined are two distinct alternatives for recipient participation in managed health care projects: mandatory enrollment and voluntary enrollment.

Mandatory enrollment

With mandatory enrollment, Medicaid recipients must choose among the HMO's or PCCM systems offered, and they are not allowed to remain in traditional Medicaid. Within any managed-care program, however, freedom of choice among authorized providers is strictly maintained. Most of the programs require recipients to choose a provider. Recipients are allowed to change primary care providers once a year or after a legitimate grievance, subject only to the time required to process the change request. PCCM programs do not eliminate choice; rather, they seek to assure that recipients are linked with a competent health care provider and, therefore, will have access to prompt, well-coordinated care when it is needed.

Voluntary enrollment

Under voluntary enrollment, Medicaid eligibles may select enrollment in the PCCM program or in any available HMO, or they may choose to stay in the traditional fee-for-service system.

States that have adopted mandatory enrollment (M) and that have voluntary enrollment (V) are shown in Table 2.

Results: Implementation and administrative issues

Since 1983, the Health Care Financing Adminstration and other funding sources have supported evaluations of several aspects of managed care programs including but not limited to their cost-saving potential, the quality of care delivered, and their ease or difficulty in implementation (Research Triangle Institute, 1983; SRI International, 1986; James Bell, 1983; and Rand Corporation, 1985). Because these evaluations are not yet complete, assessment of program impacts is limited to case studies of the implementation process and interim results reported by the States. Firm conclusions must await the completion of more rigorous analyses.

PCCM programs have often been difficult for State Medicaid agencies to operationalize and manage effectively (Freund, 1986). Individuals with appropriate administrative and technical skills often are not available within these agencies. The time required to progress from program conception to implementation has frequently exceeded initial expectations because of administrative and political barriers.

Although delays serve to make the programs more pragmatically designed, many operational issues either surface after implementation or gain greater prominence once enrollment and service provision begin. A number of these have proven very critical to program success.

Eligibility and enrollment

Many programs have attempted to sequence initial enrollment by beginning with newly certified eligibles and then proceeding to enroll others at the point of recertification for cash benefits. The enrollment process illustrates the critical link of program enrollment to eligibility certification and the reliance of the Medicaid programs (often in health departments) on the welfare-social service subsystem. Often eligibility determination workers are ill-prepared and/or not interested in this task. As eligible individuals become certified and choose a provider, information must be provided in a timely fashion to providers either directly or through the PCCM systems. Delays or breakdowns in this process can be disruptive to the program, harmful to the eligibles, and costly to the providers who become financially responsible for providing and/or authorizing services once the recipient is enrolled in their panel.

Each plan provides the Medicaid beneficiary with the opportunity to change case managers under specified conditions. These changes are usually monitored to prevent capricious switching or to identify if the reasons for the change suggest any indication that services provided are not adequate. In the demonstrations where these changes are being studied closely (such as in Arizona, Santa Barbara, New Jersey, and Kansas City, Mo.), the extent of changes are not substantial, especially given that many recipients are going to new providers for the first time. Most grievances appear to arise from patient lack of understanding of case manager gatekeeping and prior-authorization responsibility.

Provider enrollment selection and payment

Characteristics of the local provider market, including supply, existing Medicaid fees, and prior experience with prepayment, appear to be significant factors related to the development of case-management programs (Freund, 1984; Haynes, 1984). Low fees have fostered interest in exploring alternative payment systems as has concern about expanding or maintaining market share (Haynes, 1984). Skepticism about the complexity of the programs, the capacity of Medicaid to fund and manage them adequately, the disruption of traditional patterns of care and provider relationships, and the compatibility of Medicaid recipients, and eligibility with prepayment has often made recruitment of physicians difficult.

The negotiation of mutually satisfactory risk sharing and payment arrangements lies at the heart of case management, and it often determines the willingness of a provider to participate. In case-management programs, State Medicaid agencies or their contractor (an HIO) negotiate arrangements and rates with subcontracted participating medical providers. These systems attempt to provide a balance between attaining cost savings and attracting providers with the capacity and reputation for quality care. These arrangements, in effect, operationalize theoretical assumptions about risk sharing and how it is expected to produce program cost reductions through reductions in service use, unit costs, substitution of less costly forms of care, or combinations of all of these. Programs that maintain fee-for-service payment systems for case managers (with or without a management fee) represent the least risk sharing; and at the other end of the spectrum are programs that fully capitate the case manager for all covered enrollee services.

The amount of payment received by providers, as well as the method of payment, takes on great significance in case-management programs. Thus, it is not surprising that the highly complex process of rate setting (e.g., setting the capitation rate for HMO's or HIO's) has emerged as one of the key issues in the long-term viability of these programs. Many programs have employed actuarial consultants to aid them in addressing the many important technical, equity, and political issues involved in initially setting and then adjusting by fine tuning and updating these rates. Changes in methodologies or assumptions from one year to the next can destabilize or disenchant the provider community on the one hand or greatly improve relations on the other.

The complexity of the rate-setting process has frequently delayed States from developing rates in a timely manner. Demonstration startups have been delayed. Existing demonstrations have been forced to operate on old rates on an interim basis while awaiting new rates to be approved.

Generally, States attempt to derive capitation rates from a computed fee-for-service baseline developed from Medicaid claim files. A few States develop rates from the cost experience of private patients of the HMO with which it is attempting to negotiate a contract. The fee-for-service base can change, depending on a number of technical factors that may be disputed among the State, HIO, and HMO. These technical factors include the following:

- How to impute previous utilization experience when there has been little in the capitated region.
- Whether contract health plans or HMO's should be permitted to accrue interest on their capitation payments.
- How to estimate the impact of Medicaid program changes that have occurred after the base period.

Program management and performance monitoring

Perhaps the weakest element of program operations has been the failure to develop administrative controls, particularly management information systems (MIS's), and put them in place on a timely basis. As the case management concept has become better understood, the significance of providing meaningful feedback data on recipient utilization experience to case managers has become increasingly apparent. In addition, PCCM systems must develop their own treatment authorization, utilization review, concurrent hospital review, and discharge planning systems to assure that all care is appropriately authorized in advance and monitored if it is to be paid for. Also, more detailed reporting systems must be designed for quality assessment monitoring.

Most programs acknowledge that quality of care assessment receives inadequate attention during startup phases. This is not only because of the absence of suitable data systems but also because higher priorities are given to provider recruitment, patient enrollment, and claims payment. The grievance and complaint systems initially implemented tend to focus on administrative matters. It remains to be seen whether mature programs can and do develop quality assurance programs, and whether discernible differences in quality between case-management programs and fee-for-service Medicaid are found.

Results regarding cost and use

Most States have found that fee-for-service PCCM systems take a good deal of time to set up and implement. Further, the usual delays in submission of bills under a fee-for-service PCCM system mean that cost savings or utilization reductions cannot be accurately measured until a year or more after the close of the period under study. Most programs did not begin until mid-1982, and they did not have significant enrollment until 1983. It was not until 1983 that HCFA-funded evaluations of PCCM programs, and final results of these evaluations are not expected until 1987. Thus, only preliminary findings from these studies or the States can be offered.[2]

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[2] The following data were provided to the co-author in a telephone survey conducted in early 1986 with personnel from the responsible State administrative agencies. Most of these data are already available in written form in various State reports or are expected to be forthcoming.

Fee for service

The Utah PCCM has enrolled about 30,000 recipients in its single major urban area (Freund, 1984). There have been few recipient complaints, and preliminary results show a 36-percent reduction in emergency room claims, a 12-percent reduction in pharmacy claims, and a 25-percent reduction in the number of different physicians seen. Also, as could be expected, there was some increase in total expenditures for physicians' services, reflecting a desired shift away from more expensive services. Overall, the case-management initiative seems to have saved about 3.4 percent compared with the previous noncase-managed system. Operating a very similar program, Colorado expects an annual savings of about $2.7 million on a base of about 72,000 recipients.

The Michigan Physician Primary Sponsor PCCM began in July 1982, but it has had severe administrative difficulties in handling the logistics of the choice process. As a result, only about one-half of the target population was enrolled as of July 1985 (Freund, 1984). Largely because of the slow enrollment, savings estimates have only recently become available. Based on the first 12 months of data for a randomly selected sample of enrollees (experimental group) and nonenrollees (control group), savings (net of case-management fees and administrative costs) are estimated at about $1.40 per enrollee per month, or about 2 percent. Statistically significant utilization reductions were found for office visits, laboratory and X-ray tests, and prescription drugs. Total net savings for calendar year 1984 were estimated to be in the range of $1.0 to $1.2 million. Recipient satisfaction has increased as the program has become more familiar.

The Kansas Primary Care Network includes recipients under the State's General Assistance-Medical Care program (MediKan) and those in the AFDC population. A preliminary study of the first 6 months of the program shows significant savings for the general assistance population—almost $20 per month per eligible. (This figure does not include offsetting administrative costs of the $3.00 per month case-management fee paid under the program.)

Mandatory capitated programs

Savings as a result of the mandatory enrollment capitation programs appear to be in the 5-percent range. If the initial estimate of fee-for-service costs for the State is accurate, State savings are assured. The most salient issues affecting these savings are whether the HIO or the plan itself can control costs enough to stay within the capitation rate and remain solvent, and whether the financial incentives will lead to restricted access, denial of needed care, or poor quality care.

Of the two operational county-based HIO's in California that were partially capitated, Santa Barbara has been financially successful. Santa Barbara reported cost savings of $250,000 to $500,000 over the first 3 years of operation (Gibson-Kern, 1984). Savings are attributed more to reductions in emergency room use and doctor shopping than to sharp reductions in hospital use. Officials from Santa Barbara believe hospital use rates were already fairly low because of previously implemented regulatory strategies. However, the Monterey program filed for bankruptcy after its first operational year. Factors contributing to the failure included the following (Garfinkel, 1985):

- Failure to place physicians at risk.
- Guaranteeing higher payments to hospitals than in the base year.
- Absence of adequate management information.
- Lack of a prior authorization system.

The Citicare program in Louisville, Kentucky, an HIO, operated well within its capitation revenues, thus, saving about 10 percent more than the original projections (Freund, 1984). However, there was opposition to the plan from some physicians. Some consumers complained it was difficult to obtain referrals for specialist care; and political considerations appear to have played some role as well. The program closed in June 1984. However, after a 3-year hiatus, the State is now implementing a similar program statewide.

The partial capitation approach has been the preferred method of paying primary care providers in the two HIO's that were financially successful (Santa Barbara and Citicare), but direct State experience with partial capitation is limited to date. The Oregon Physician Care Organizations have recently completed their first contract year, so no data are yet available. The Michigan Capitated Ambulatory Plans (CAP's) have been operating for a longer period, but results are still tentative. The CAP's receive a capitation payment equal to 100 percent of the estimated fee-for-service costs for physicians' services and ambulatory care, and they share in the savings if they reduce inpatient utilization, which continues to be paid by the State on a fee-for-service basis. Results for the first contract year were positive, with overall savings to the State estimated at about 10 percent. However, enrollments were small, and some plans started late and operated for less than the full year. The question of selection bias has been raised in this program. Preliminary results for the second contract year are even more strongly positive, but final results cannot be known until all hospital bills have been received.[2]

Programs designed around mandatory choice among competing HMO's also guarantee the States up-front savings, again assuming the initial fee-for-service estimate is accurate. For example, in 1985, costs were 5 to 7 percent below fee-for-service projections in Dane County, Wis., and 7 to 10 percent less in Milwaukee for the AFDC population. HMO's were required to bid no more than 95 percent of projected fee-for-service costs in Madison and no more than 93 percent of fee-for-service costs in Milwaukee. HMO's whose bids were lower received preference in the assignment of AFDC recipients who did not exercise their right to choose their own plan. With about 9,500 recipients enrolled in Dane County and over 105,000 in Milwaukee County, Wisconsin expects to save between $12 and $13 million over the 1985-87 biennium. Recipient complaints have been few, although there have been problems with ambulance services; and some advocates have complained that the HMO's are not paying proper attention to child health screening requirements.

Selection bias issue

When enrollment in HMO's and other prepaid health plans remains voluntary, the question of savings to the State is complicated by the potential for biased selection. Although Medicaid HMO rates (based on a percent of expected fee-for-service cost) may be adjusted for such variables as geographic area and demographic characteristics of the enrollees, actual health care utilization patterns of the enrollees cannot be predicted with certainty. If the individuals who voluntarily choose to enroll in HMO's are healthier than the average individual in their group, the State will lose money or forego savings, because it will pay the HMO close to the average fee-for-service cost for individuals who would in fact have used a significantly lower amount had they remained in the fee-for-service system. On the other hand, if the individuals who choose to join HMO's are sicker than the average individual in their group, the State will do well and the HMO's may lose money.

Mandatory enrollment in HMO's, as exemplified by Wisconsin, avoids the biased selection problem, at least as far as the State is concerned, by requiring that all Medicaid recipients (or all of some subset of Medicaid recipients) choose among the available prepaid plans. However, competing HMO's, or case managers, may suffer adverse selection or gain from preferred selection, depending on which types of Medicaid recipients select them. Absent any empirical evidence to suggest biased selection is occurring, States usually feel comfortable that they are saving money when Medicaid recipients voluntarily enroll in HMO's. This assumption will be tested in all HCFA-funded evaluations.

Summary

Although most State managed health care initiatives have not been operational long enough to have yielded definitive results, managed care remains a promising approach to the cost and access-quality issues of providing health care to the poor under Medicaid. With appropriate staffing, planning and time, and attention to MIS and quality assurance systems design, programs can be successfully implemented in a timely fashion. Most preliminary evidence on savings is favorable, and few significant access-quality complaints have surfaced so far. Major research initiatives are underway that are expected to provide much needed empirical evidence to evaluate this strategy of managed care.

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Overview of employer capitation activities

by Kevin E. Moley

This article addresses a new initiative of the Health Care Financing Administration (HCFA) to contract on a group basis with: employer self-insurance plans, unions, group health insurance companies, and Taft-Hartley Health and Welfare Funds for groups of Medicare beneficiaries. Under this new concept, Medicare beneficiaries may elect in the future to obtain Medicare coverage through their group insurance plan rather than through traditional Medicare, with HCFA paying the premiums. This Medicare demonstration will bridge the gap between employer plans, which coordinate with traditional Medicare coverage, and employer-sponsored health benefit plans. This will make available to Medicare-eligible retirees similar, if not the same, managed-care alternatives as are currently available to active employees.

Among the highest priorities of the Health Care Financing Administration's (HCFA's) research, demonstration, and evaluation agenda for fiscal years 1987 and 1988 will be the study of the feasibility of the so-called employer-at-risk capitation concept. The term employer-at-risk is somewhat misleading because HCFA is willing to contract on a risk basis not only with employers but others. These include unions, combinations of employers and their unions (including Taft-Hartley Health and Welfare Funds), and even broader combinations of employers, unions, their insurers, or others responsible for the medical expenses of health care to groups of Medicare-eligible retirees. Estimates are that as many as 6 million beneficiaries could be covered by such plans.

In short, HCFA desires to test expansion of the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 which authorizes contracts with federally qualified health maintenance organizations (HMO's) and competitive medical plans (CMP's) to allow contracts with employers, unions, and insurers. The Department of Health and Human Services will be asking Congress as part of the 1988 legislative agenda for the authority to expand the TEFRA statute in this way. The Administration voucher bill, S. 1985, most recently introduced by Senator Durenberger (R., Minnesota) on December 18, 1985, contains a provision allowing HCFA to contract with such entities as employers, unions, insurers, and others for the provision of the Medicare benefit package.

These legislative initiatives reflect the Reagan Administration response to the marketplace. Specifically, the demand side of the market equation (i.e., retired Medicare enrollees and their former employers or unions who are still responsible for providing Medigap insurance) is looking for relief from the inflationary trends in an unmanaged fee-for-service system and from the administrative burden of a confusing dual claim system. They are also seeking to improve continuity of care, which is more likely to be available through managed care under one payer.

According to hearings published by the Senate Finance Committee, some studies estimate that the average person 65 years of age or over either pays $1,660 a year out of pocket or is reimbursed through a retirement plan or a Medigap policy, despite Medicare coverage.[1] The bulk of these expenses are paid for through employer-sponsored health retirement plans. According to a study sponsored by the Department of Labor, nearly 60 percent of employees participating in health insurance plans also were promised retiree health insurance benefits. A 1985 study of 200 large corporations, conducted by the Washington Business Group on Health, indicates that 95 percent offered medical coverages to retirees. Although there is widespread coverage, this type of benefit has become a growing expense to private industry. For example, a study of medical expense plan costs by AT&T indicated an increase of 18.2 percent per year between 1970 and 1983. Many employers are having to come to grips with the reality of the unexpected increases in their frequently unfunded liability for Medigap insurance, resulting from the dramatic rise in the front-end deductible. The Medicare deductible has risen from $400 in 1985 to $492 in 1986, and will reach $520 in 1987, which is partially caused by the decrease in the average length of Medicare hospital stay. As long as employers and unions are contractually or morally obligated to continue to provide Medigap policies covering the deductible and copayments to their retirees, and as long as fee-for-service medical expenses continue to rise, employers funding retiree insurance have incentives to consider alternative delivery systems to provide basic Medicare benefits for retirees through managed care systems.

As the Administration's legislative initiative in this area goes forward, the time is ripe for HCFA to pursue demonstration projects that test ways of responding to these marketplace demands with the "employer-at-risk" capitation concept. Given the variety of organizations interested in doing such demonstrations, now is the time to change the name from "employer-at-risk" to "Medicare Insured Group."

Certainly, what all these organizations have in common is that they represent group insurance for Medicare-eligible retirees. There are significant

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[1] The various studies cited are contained in a report prepared by the staff, U.S. Senate, Special Committee on Aging. Hearings before the Subcommittee on Savings, Pensions, and Investment Policy, Committee on Finance, Senate. Washington, Sept. 9, 1985.

Reprint requests: Sheila B. Duvall, Health Care Financing Administration, Office of Prepaid Health Care, Room 317H, Hubert H. Humphrey Building, 200 Independence Ave., SW., Washington, D.C. 20201.

questions that will have to be resolved before HCFA can proceed even on a demonstration basis with this concept. For instance, what constitutes a group? What number of Medicare beneficiaries will be needed before contracting with such a group is efficient to the government? The question of experience-based rating and prospectively priced renewing poses a number of concerns.

Tentatively, HCFA has decided that although the adjusted average per capita cost (AAPCC) should be used as the pricing mechanism for enrolling individual Medicare beneficiaries into TEFRA risk-contracted HMO's and CMP's, the question of adverse or biased selection can be more directly addressed by using experience-based rating. This approach would reflect prior utilization in determining the level of payment to Medicare Insured Groups. We are tentatively exploring the use of experience-based rating so that HCFA's level of payment to Medicare Insured Groups could be set at 95 percent of their average projected cost (APC).

The APC could be based on a formula using prior cost and utilization of each Medicare Insured Group as a payment level. An APC set at 95 percent of what the group as a whole would otherwise have been expected to cost Medicare still provides real savings to the Federal Government and reduces the concern for biased selection in the group. There are a host of questions and concerns surrounding the issue of experience-based rating, not the least of which is the adequacy of the data needed to construct an experience-based rating formula. Other questions include the details of the experience-based rating formula itself and the methods for the renewal rating, through prospective pricing, of such groups from one year to the next.

In the world of commercial group health insurance, the renewing of rates for group cases remains an inexact science. Despite the existence and use of rather exact data bases to drive commercial experience-based rating formulas of group health insurers, the vagaries of the health portion of the Consumer Price Index combined with unexpected anomolies in utilization create problems in forecasting future rates to correctly calibrate for expected changes in utilization and inflation. More often than they would like, group health insurers find themselves on the losing side of the financial equation (i.e., more dollars in claims being incurred than premium dollars to cover them). In the private sector this may result in the group health insurer absorbing the loss in the subsequent renewal without trying to make up for that loss. If other elements of its contractual obligation with the employer or union remain satisfactory, the group health insurer will probably retain this group. Alternatively, if the group health insurer takes into account the loss sustained in the prior period and offers higher renewal rates to the group client in order to recoup all or part of the previously sustained loss, it might lose the client through competition from another group insurer able and willing to "experience-rate" the group without having to take into account the prior loss. These scenarios are of interest to HCFA because they clearly demonstrate the Federal Government's dilemma in renewing Medicare Insured Groups. In order to establish a system with long-range potential for business certainty and fairness, HCFA will have to establish its renewal formula at the inception of any Medicare Insured Group demonstration and assure its continuation throughout the life of the demonstration.

The most commonly proposed renewal process involves using all or some component of the yearly increase in AAPCC. For example, the average yearly increase of the AAPCC, prorated per capita, for the counties in which the demonstration would cover retirees, might be considered. The dilemma is that any measurement using AAPCC will not take into account the actual experience of the Medicare Insured Group and consequently may not conform with commonly accepted methods for renewing group health insurance business in the private sector. Renewal, therefore, would not take into account the group whose experience is either better or worse than the rate of increase accounted for by the average increase in AAPCC. For instance, if actual experience indicates an increase in excess of the AAPCC increase, the sponsor of the Medicare Insured Group would be forced to absorb a loss, unsettling the balance of this type of reimbursement formula. Despite prior assurances concerning commitments and contractual agreements between HCFA and the Medicare Insured Group, the potential for finger-pointing remains high.

Even though the initial experience-based rating and prospective pricing renewal formulas would have to be mutually agreed upon, the data used for its development would primarily fall within HCFA's domaine. In retrospect, this could lead the Medicare Insured Group to question the underlying assumptions on which the original 95 percent of average projected cost was based. HCFA, of course, could argue that the utilization controls of the Medicare Insured Group, for whatever reason, proved inadequate to restrain costs within a fair and efficient target of 95 percent of the APC. Unfortunately, this development might quickly lend itself to political solutions. Although participating retirees in Medicare Insured Groups might receive more generous benefits than are available under the current Medicare program, the mere threat of contract termination poses possible problems for HCFA. In this case, it could mean being forced to either write off the demonstration as a failure or revise the renewal formula for political reasons, which would set an unfortunate, possibly disastrous financial precedent. HCFA is committed to avoiding such situations by extensive pre-contract negotiations.

Organizations wishing to contract with HCFA as Medicare Insured Groups are aware of these potential pitfalls, which accounts for their interest in "experience rating" and renewal formulas using some form of risk sharing through the use of risk corridors, stop losses, or other underwriting techniques commonly used in the commercial marketplace. The use of these techniques is inappropriate to the degree that they provide payment of more than 95 percent of average projected cost because of the issue of payment equity. HCFA would oppose any techniques that would establish a two-tier system benefiting one segment of Medicare beneficiaries at the expense of those not eligible to be covered by a Medicare Insured Group.

One way to monitor the equity issue is through use of a control mechanism, which would match the individual Medicare beneficiaries in a Medicare Insured Group to payments under the AAPCC system, aggregating those data and comparing them with the average projected cost for the group. This comparison information may be desirable not only from a research and demonstration perspective, but also from the standpoint of determining what costs or savings would be generated had the same group of beneficiaries enrolled in TEFRA HMO's or CMP's versus a Medicare Insured Group.

Certainly much thought must be given to the problems of experience-based rating and prospectively priced renewal of Medicare Insured Groups. HCFA has much to learn about risk management. Therefore, it will be necessary to work closely with outside groups. These groups will include prospective Medicare Insured Groups as well as commercial group insurance carriers, their clients, and other experts in the field that can offer HCFA the benefits of their experience.

A critical legal concern is how State insurance regulators may oversee the sponsors of Medicare Insured Groups. Many combinations of employers and unions are self-insured under the regulations of the Employment Retirement Income Security Act, 1974. Even those such as General Motors use an insurance carrier for some administrative services. However, in a system where HCFA makes a payment in the form of the APC to such a self-insured combination, the State Insurance Commissioners might be concerned that the group is acting as an insurance carrier and is thereby subject to licensing and other statutory requirements. These are questions HCFA is exploring through the National Association of Insurance Commissioners and other authorities in the field.

The concerns outlined above are particular to the Medicare Insured Group concept and relate to our relationship with the groups as risk-takers and not with the groups' individual Medicare-eligible retirees. Of paramount concern is how this concept affects the individual Medicare beneficiary. TEFRA has given HCFA considerable experience with Medicare beneficiaries in prepaid plans. It will be essential that the lessons learned be applied to Medicare-eligible retirees in a Medicare Insured Group. A program of continuing education is essential in order for Medicare beneficiaries to understand the difference between traditional fee-for-service Medicare and that provided through a prepaid plan. To some degree these problems will be mitigated in the case of new retirees who will be coming directly from their employer or union plan into a similar if not the same employer or union retiree plan. They will encounter little or no change in their health care delivery system. In other cases where older retirees participate in a Medicare Insured Group demonstration, there may be immediate changes in their health care delivery system which can exacerbate the problems generally confronted by Medicare beneficiaries moving from traditional fee for service to a prepaid plan. Further, there is a good chance that some Medicare Insured Group demonstrations might offer choices of services to their Medicare-eligible retirees along the level of "triple" or "double" options by utilizing HMO's and preferred provider organizations (PPO's) as well as managed fee-for-service systems with some form of prior authorization for hospital admissions, mandatory second surgical opinions, and other utilization controls. They may offer these options with varying degrees of beneficiary cost sharing, e.g., 100 percent coverage for care rendered through the HMO option, 90 percent coverage for care rendered through the PPO, and some lesser percentage coverage for care rendered through fee for service. In some respects, an older retiree may face a host of unfamiliar choices for health care protection and security, but new retirees coming directly into a Medicare Insured Group from employment might face little or no change from what they have experienced throughout their employed career.

HCFA has found it necessary and important to advise each beneficiary who enrolls in a TEFRA risk-contracted HMO or CMP on the implications of their choice to join a prepaid managed health care plan, so they will be assured an informed choice. Some similar, albeit plan-specific, communications are likely to be necessary to notify Medicare-eligible retirees of their rights, liabilities, and obligations within a Medicare Insured Group.

It is important to note that individual Medicare-eligible retirees enrolled in an employer- or union-sponsored health insurance plan retain the same rights as any other Medicare beneficiary, including the right not to participate in the plan or plans offered by the Medicare Insured Group or to disenroll from such a group for whatever reason they so choose. The underlying philosophy of the Reagan Administration is promoting competition through consumer choice, making available to beneficiaries the same options in the health care delivery systems as are available to their fellow Americans under age 65.

This article has outlined only some of the concerns and considerations that must be addressed before a Medicare Insured Group contract can be signed, demonstrated, and become an operational option of the Medicare program. As difficult as some of these problems are, we in HCFA believe they are solvable and solvable sooner, not later. In fact, we expect to be demonstrating the Medicare Insured Group concept in 1987.

Considerable interest has been expressed in doing such demonstrations and more interest is expected now that HCFA's Office of Research and

Demonstrations has issued its research and demonstration agenda in the *Federal Register*. From within the universe of interest that is expressed, HCFA's Office of Prepaid Health Care in conjunction with the Office of Research and Demonstrations would like to pursue several such Medicare Insured Group demonstration contracts, depending on the size of the groups chosen. It would be desirable for groups to range in size from a few thousand Medicare-eligible retirees to many thousands of Medicare-eligible retirees. We would expect such groups to represent diverse experience with Medicare utilization. For instance, those groups that have paid for "rich" benefit packages for their workers might, as a result, have driven up Medicare utilization even though they might on average also have a healthier than average population when compared with Medicare demographics. On the other hand, an employer who already contracts with an HMO or whose group insurance uses prior authorization, mandatory second surgical opinions, and other utilization screens in its employee plan might have driven down utilization. In either case, we would hope an experience-based rating formula paying 95 percent of average projected cost would afford a true 5 percent savings to the Medicare trust fund.

Diverse groups have expressed interest in undertaking such demonstrations. Some preliminary discussions have been held. Most notably, former Secretary of the Department of Health and Human Services (DHHS), Joseph Califano, now a board member of Chrysler Corporation, expressed interest in such a concept in an April 1986 speech to the Economic Club of Detroit. If such diverse interests as a major U.S. employer and its unions, former President Jimmy Carter's Secretary of DHHS, and President Ronald Reagan's Secretary of DHHS can agree on this concept, surely enough talent can be attracted to find workable solutions to the problems already mentioned and others not yet foreseen.

Pricing strategies for capitated delivery systems

by Leonard Gruenberg, Stanley S. Wallack, and Christopher P. Tompkins

This article discusses alternative methods for establishing a fairer pricing mechanism for Medicare recipients who enroll in health maintenance organizations and other competitive medical plans. The current method, based upon the adjusted average per capita cost, is inadequate because it fails to adjust premium levels for differences in health status; it establishes undesirable incentives that may lead to underservice, and it is tied to costs in the fee-for-service system. Alternative methods would incorporate health status, have Medicare share the risk with HMO's, and base payment on HMO experience.

Introduction

With the implementation of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), opportunity for membership in a health maintenance organization (HMO) or other competitive medical plan (CMP) will become increasingly available to most people who are 65 years of age or over.[1] Given the growing emphasis on prospective payment systems such as capitation and diagnostic-related groups (DRG's), the task of setting prices for units of medical service is a critical one.

Although price setting may be useful to the Medicare program as a means of controlling increases in medical care costs, it places a burden on the reimbursement system. Payments to providers must be equitably distributed and appropriate and sufficient provider incentives established. HMO capitation payments must be priced fairly so as to give medical plans adequate resource levels to cover reasonable costs, but to prevent unnecessary overpayment.

In these respects, the current reimbursement system is not working well. Evidence to date indicates that the Medicare program stands to lose considerable amounts of money because, unlike hospitals under the DRG payment system, HMO's must volunteer to participate under TEFRA. HMO's that would not be better off by participating may decline or withdraw, leaving the Government to bear the risk of loss.

In the payment mechanism established under TEFRA, the Health Care Financing Administration (HCFA) seems to have found an effective incentive for widespread HMO participation. By the middle of 1986, 1 1/2 years after the regulations were issued, about 40 percent of the 480 HMO's in the country had signed or applied for Medicare risk contracts (HCFA, 1986). Being a new program, however, total penetration of HMO's into the Medicare market was still low, with about 667 thousand (between 2 and 3 percent) of the elderly enrolled in risk contracts. These numbers serve to emphasize that growth in the near future may be rapid; there is now an opportunity to study some alternative pricing strategies that may help the Medicare program benefit from utilizing capitated delivery systems.

Use patterns in an elderly population

In pricing HMO capitation payments for Medicare enrollees, it is important to confront some prominent characteristics of medical care use among the elderly. The well-known fact that, on average, medical care costs increase significantly with age does not, by itself, represent a particular problem for constructing a Medicare reimbursement system. However, the distribution of costs that accompany the aging process does have implications for price setting. Higher-than-average costs for the elderly result, primarily, from a relatively large number of people with high-cost illnesses rather than from an overall increase in the costs of a typical Medicare beneficiary.

There are three major contributions to the relatively high prevalence of high-cost individuals among the elderly. The first has to do with the natural fact that mortality rates are relatively high among the elderly, and that, on average, the elderly have extremely high medical care costs during the last year of life. Lubitz and Prihoda (1984) found that, in 1978, the 5.9 percent of the elderly Medicare population who died accounted for 28 percent of total Medicare expenditures.

The second contribution relates specifically to the prominence of chronic illness and repeated hospitalizations. Anderson and Steinberg (1984) found that a majority of Medicare hospital costs were associated with repeated hospitalizations over an extended period of time. In fact, they showed that during the period 1974-77, one-eighth of Medicare beneficiaries were hospitalized three or more times, accounting for 60 percent of Medicare's hospital expenditures during that 4-year period.

A third contribution is the association of high medical costs with functional impairments. Gruenberg and Tompkins (1985b) found that two out of five Medicare recipients who were hospitalized at least three times during a 3-year period (1975, 1976, and 1977) had some limitations in mobility, and nearly one-eighth were homebound. For many of these people, limitations in mobility are also likely to restrict their access to medical care.

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[1] CMP refers to an organization, other than a federally qualified HMO, that is approved to enroll Medicare beneficiaries under TEFRA. In this article, the term HMO will be used generally to refer to both HMO's and CMP's.

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Implications for pricing

The patterns previously described indicate that a substantial minority of the elderly population are near death, have some chronic illness leading to repeated hospitalizations, or have disabilities that restrict their mobility. The fact that such a large part of Medicare expenditures are spent in this way must be taken into account in designing an adequate pricing system. Payment levels should be modified to reflect enrollee health status, and some mechanism for reducing the risk to providers of caring for these very high-cost members needs to be introduced.

In order to have a major effect on Medicare's overall budget, it is necessary to have many Medicare recipients enroll in HMO's, including a significant proportion of the heavy users. But, under the current payment system, HMO's are better off financially if they exclude the heavy users. It would be better if HMO's were financially indifferent to individuals' health status or, perhaps, if payments for the chronically ill were relatively generous.

HMO's, for the most part, have had experience primarily with nonelderly populations, in which there are only very small proportions of frail and terminally ill people. With representative elderly groups, HMO's must carefully develop strategies for handling the frequent occurrences of expensive terminal and chronic cases. Budget constraints will pressure plans to limit services for these cases so that cash flow and service levels for the majority of members will not be threatened. It would be hazardous to allow any HMO's to face them with insufficient funds. Such cases could not only jeopardize the financial outlook of the HMO's, but could add to the chances for underservice to Medicare members.

Experiments with the social/health maintenance organization (S/HMO) concept have been favorable. The S/HMO received higher payments from Medicare for nursing-home certifiable members living in the community. This has enabled the elderly in poor health and with chronic limiting conditions to join prepaid managed plans that offer enhanced benefits.

Insurers in the private sector typically confront the threat of adverse selection by offering multiple coverage options (with differential premiums) and using experience-rating techniques that follow changes over time in the expected cost of large defined groups. But with Medicare, prices are set by directly including the experience of a larger (and different) population. Medicare may benefit from borrowing techniques proven effective in the private sector. However, the S/HMO and Federal Employee Health Benefits Program experiences suggest that, in a competitive environment, health plans with benefit packages that are specially designed to attract those in poor health may not be chosen by people at lower risk. People who are well are often interested in plans with more limited benefits and lower premiums.

These findings suggest that there may be limitations in what pricing alone can do to assure a balanced case-mix in HMO's serving the elderly. More comprehensive initiatives (including wider attempts to inform consumers about their options), as well as some constraints on marketing, private premiums, and benefit design, may be necessary. Given the current Medicare reimbursement system, HMO's offering more limited benefits will win in the competition against plans designed especially to enroll a representative mix of elderly.

Medicare HMO reimbursement system

Description

The reimbursement system currently used by HCFA is based upon the adjusted average per capita cost (AAPCC) of Medicare recipients who remain in fee-for-service. The AAPCC is calculated by a multiplication of the following three factors: (1) a projected national per capita cost, (2) a county price adjustment, and (3) an enrollee-mix adjustment (Kunkell and Powell, 1981).[2]

HMO's choosing to enter into risk contracts with HCFA are paid capitation amounts based, in part, on both the AAPCC and an amount called the adjusted community rate (ACR). The ACR is an estimate of what an HMO would charge as a premium to provide its non-Medicare enrollees with the Medicare benefit package, adjusted to take into account the higher use experience of the elderly. HMO capitation payments from HCFA are limited to 95 percent of the combined Part A and Part B AAPCC's; however, any amount exceeding the ACR must be returned to HCFA or used either to subsidize Medicare enrollees' private premiums or to expand their benefits. Payments are in the form of full capitation, that is, a fixed payment for all services in the Medicare benefit package, and there are no arrangements for retrospective adjustments.

Problem of biased selection

Given the concentration of use among a minority of the population and the frequent occurrence of extended periods of high use, a primary concern has to be the potential for biased selection. Currently, HMO's receive capitation amounts based on the total elderly population, which includes a certain prevalence of high-cost individuals. The risk for HMO's and HCFA, therefore, has to do with the actual proportions that are enrolled.

A major shortcoming of the AAPCC formula has to do with its inability to adjust capitation levels for differences in health status among enrolled groups (Thomas et al., 1983). Variables now used to adjust for class differences are age, sex, welfare status, and institutional status.[3] All but 1 percent of the variance in Medicare costs is attributable to differences occurring within the risk cells (Gruenberg, 1982). Unlike the random variations in annual medical costs that may occur for an enrolled group, systematic bias in health status could lead to losses that are magnified as the size of the HMO increases.[4] Furthermore, because the problem stems from differences in relative health status, it may persist for a number of years.

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[2] The AAPCC is calculated separately for Medicare Parts A and B.

[3] Medicare entitlement status is also used to distinguish rates. End stage renal disease patients and nonelderly disabled each have separate AAPCC rate books, and these subpopulations are not dealt with explicitly here.

Studies by Eggers (1980), Eggers and Prihoda (1982), and Jackson-Beeck and Kleinman (1983), show that some pre-TEFRA Medicare HMO's have enrolled a population that was apparently healthier, on the basis of prior levels of medical care use, than their counterparts in fee-for-service. These results suggest that HMO's may be significantly overpaid under the existing AAPCC formula. Moreover, early results of a U.S. General Accounting Office (GAO) study (1986) indicate that favorable selection has continued in the post-TEFRA period.

It should be noted, however, that the findings of favorable selection were for group and staff model HMO's and that new enrollees were less likely than typical area residents to have a usual source of care. Further expansion of capitated plans into the Medicare program will probably include independent practice association (IPA) and network models that may tend to enroll their current patients because patients want to remain with their own physicians (Luft, 1982). This could result in favorable or unfavorable selection, depending on the health status of the patients. Alternatively, individuals may choose to not enroll based on advice given by their physicians (Berenson, 1986). This, too, could result in favorable or unfavorable selection.

Incentives to HMO participation

For better or worse, the financial incentives established by any reimbursement system will affect the behavior of providers, including their participation, marketing strategies, and service delivery. Therefore, a key aspect of any reimbursement system has to do with the types and strengths of incentives that arise.

One objective of the Medicare program, since its inception, has been to furnish beneficiaries with access to mainstream providers in the community. Broad HMO participation in Medicare would give patients more opportunity for choice, or, perhaps, in some circumstances improved access to care. The decisions by providers to participate will be contingent on a reasonable expectation of avoiding financial losses. Whereas much of the concern with the DRG system has to do with which hospitals will benefit and which will be harmed, with a voluntary capitation system it is HCFA that is at highest risk of losing.

Furthermore, the decision not to participate will be at cross-purposes with attempts to address major inadequacies in the delivery of health services to the elderly (Besdine, Levkoff, and Wetle, 1984). The hiring of, or contracting with, experts and specialists in chronic and high-cost illnesses (who are best able to provide care to enrolled groups with higher than average costs) is unlikely to occur without an adequate adjustment for health status in the AAPCC formula. The participation of these experts and specialists could increase HMO risk by attracting more frail high-cost members.

This could contribute to individuals' uneven access to capitated systems. Administrative safeguards have been enacted as part of the TEFRA regulations to help prevent this, including open enrollment requirements and prohibitions against imposing explicit health status-screening enrollment criteria. Yet, discouragement of enrollment by individuals with higher than average expected cost may still occur through carefully designed marketing and benefit structures (Luft, 1982).

Another aspect of the current reimbursement system that may need modification is the fully prospective nature of the payments. Although it is believed that fee-for-service has been characterized by waste, it may be that full capitation will err in the opposite direction. Strong incentives to cut back on services (in part, because providers are being forced to bear the full marginal costs of treatment) may result in standards of care that are below what clinicians or economists would describe as optimal (Ellis and McGuire, 1986; Schlesinger, 1986). This may be especially true with even the prospect of revenue shortfalls. So far, HMO's have, for the most part, had to compete with fee-for-service providers, and there is no evidence to date that quality of care in HMO's is poorer. However, in an environment of increasing competition between HMO's, it is not clear how advisable it is to rely on systems that cause all treatment costs to have a direct impact on the provider organization's bottom line.

Fee-for-service price standard

Legislated guidelines expressed in TEFRA state that HMO's are to be paid according to what enrollees would have cost Medicare had they not chosen to join an HMO. Hence, in the AAPCC formula, fee-for-service data is used to estimate expected costs for individuals who enroll.

There are some important reasons why we have to move away from this fee-for-service standard. First, the evidence cited earlier concerning favorable selection indicates that HMO joiners do not represent the fee-for-service standard. Errors of this type would become more serious as HMO penetration increases; the costs of the elderly in fee-for-service compared with HMO's would continue to diverge, and this would tend to amplify the error in Medicare HMO premiums. Second, the county fee-for-service cost estimates will become less accurate and less stable, to varying degrees, with sizable HMO penetration rates (Beebe, 1982). Third, it would be desirable to abandon such a standard as a matter of policy when the level of competition faced by Medicare HMO participants has been largely with other HMO's and not with fee-for-service providers. In some areas, such as Minneapolis, this may already be occurring. Biased selection is apt to vary in type and degree across counties and among differing types of prepaid plans, making a simple pricing rule, such as paying 95 percent of the AAPCC, uneven in its effect.

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[4] The notion of losses to Medicare refers to paying more for enrollees because they have joined an HMO. Some of this HMO surplus must be used to directly benefit Medicare enrollees.

Refining the reimbursement system

Several alternatives have been developed and proposed that would improve the accuracy of cost projections or help to lessen the effects of errors. It is worthwhile exploring these options because they could potentially refine, or make incremental improvements in, the current AAPCC formula; in addition, they represent techniques that may be transferable to other types of reimbursement systems that the Government may eventually choose to replace the AAPCC.

The refinement options can be grouped into two broad categories that reflect the nature of the modification. The first category has to do specifically with enrollee classification systems, i.e., the establishment of actuarial categories that differentiate enrollees for revenue purposes. A number of variables have been proposed that are related to health status and the variance in expected cost. The second category of refinement has to do with the nature of the payment system itself. Although the current approach is to transfer full risk to HMO's by full capitation, there are reasons to consider other arrangements.

Statistical performance of models

Interpretation of statistical results for alternative models presupposes an understanding of what the goals of setting prices ought to be. Projecting the expected medical costs of individuals is a task that involves considerable error. The ability of the various models to do this is commonly thought to be reflected in the measure of explained variance (R-square) obtained for the model, and this turns out to be quite small for every model (at most about 10 percent). However, paying HMO's fairly entails a correct average price for the entire group, not for each individual. Assuming that there was no systematic biased selection, for any of these models to perform well would require only that groups were large enough to create stable averages. In principle, this might not be a serious problem because HMO's could use their entire membership base to protect against cost overruns in any one year.

When enrolled groups are not representative of the local elderly population, then the relative abilities of the models to project accurate prices become consequential. Performance will depend on the explanatory power of particular variables included in the model, which is perhaps not conveyed well by any one statistic. Ash et al. (1986) developed a goodness-of-fit measure, which they called the grouped R-square; this measure quantifies the variance in future costs that is explained by a model's classification system as a whole. Another measure (the predictive ratio) used by them and others (Beebe, Lubitz, and Eggers, 1985) was the ratio of predicted to actual costs for various biased subgroups. Norms and properties have not been established, but is is clear that there is a need for tools such as these.

Health status classification models

Thomas et al. (1983) proposed four criteria for evaluating alternative classification models: predictability, reliability, invulnerability to provider manipulation, and administrative simplicity. There is considerable controversy over which of these properties is more critical. For instance, there are differences of opinion as to whether the variables used should be restricted to those that now reside in Medicare administrative files or include those identified after an individual is enrolled. To a certain extent, the controversy stems from lack of knowledge about the ultimate utility of different variables and how the relative health status of HMO member populations may change over time.

Many variables have been proposed as representing potential improvements to the current AAPCC formula, including the relative mortality rate observed for an HMO (Cookson, 1983; Tolley and Manton, 1984). A useful summary of many others can be found in Lubitz, Beebe, and Riley (1985). Some authors have suggested using prior medical care use as an indicator of future use (Trapnell, McKusick, and Genuardi, 1982). Beebe et al. (1985) proposed a prior-use model that uses information readily available in Medicare files; this model is currently being tested in a demonstration program. One criticism of this model has been that although this prior-use model provides an administratively simple method, the reliance on aggregate prior use measures (that do not differentiate self-limited from chronic conditions) could lead to provider manipulation through selective marketing.

In an attempt to address this and other perceived deficiencies in simple prior-use models, another health status measure, based upon diagnostic information associated with prior hospital episodes, has been proposed for the AAPCC formula. Limiting use information to that related to specified conditions helps to provide a more direct measure of health, especially as it relates to chronicity and expected future costs. An analysis of Medicare data indicated that a clinically derived dichotomous diagnostic category was able to statistically identify those individuals who would have significantly higher total medical costs for the next year (Anderson and Gertman, 1983). Drawing upon this work, Ash et al. (1986) proposed a set of marker diagnoses, which were chosen, in part, on an empirical basis (i.e., as related to high future costs) and, in part, on a clinical evaluation of these diagnoses' ability to reflect serious

Table 1

Reimbursement ratios and percent of Medicare costs, by diagnostic-risk group

Diagnostic-risk group 1979	1979 percent of population	1980 reimbursement ratio	1980 percent of Medicare costs
Low risk[1]	91.2	0.83	76.2
Medium risk[2]	5.6	2.22	12.5
High risk[3]	3.2	3.49	11.3

[1] Low-risk group includes the nonhospitalized and those hospitalized for nonmarker diagnoses.

[2] Medium-risk group includes, for example, stroke, ischemic heart disease, rheumatoid arthritis and osteoarthritis, and intestinal obstruction.

[3] High-risk group includes, for example, diabetes mellitus, chronic obstructive pulmonary disease, heart failure, and cancer.

SOURCE: (Ash et al., 1986).

conditions with relatively small opportunities for provider discretion in treatment (Anderson and Steinberg, 1984 and 1985). This model includes risk factors by age, sex, and three categories of diagnostic cost groups, of which two signify higher-than-average expected costs next year. It is hoped that this type of information could be obtained for individuals through validated self-reporting, while in an HMO or prior to being eligible for Medicare.

In Table 1, the three diagnostic cost groups proposed in Ash et al. (1986) are shown. The low-risk group was comprised of beneficiaries who were either not hospitalized or were hospitalized for nonmarker principal diagnoses in 1979. More than 91 percent of the elderly population were in this group, which had a reimbursement ratio in 1980 of 0.83 and accounted for more than 76 percent of Medicare expenditures that year. The medium-risk group included beneficiaries who were hospitalized in 1979 with a principal diagnosis associated with rather high expected costs the next year. The 5.6 percent of the elderly population in this group had a reimbursement ratio of 2.22 and accounted for 12.5 percent of 1980 expenditures. The third and highest cost group was made up of 3.2 percent of the population, had a reimbursement ratio of 3.49, and used 11.3 percent of Medicare expenditures in 1980.

Possible methods have been devised for developing payment formulas that depend, in part, on mobility limitations, as well as activities of daily living and instrumental activities of daily living scales of functional limitations (Thomas et al., 1986). A modified application of the AAPCC formula, incorporating disability level as measured by eligibility for publicly supported nursing home payments, is being tested in the S/HMO demonstration. In Table 2, the risk cells proposed by Gruenberg and Tompkins (1986) for a combined diagnostic and disability AAPCC formula are shown. It can be seen that the approximately 24 percent of the elderly who were classified as disabled accounted for more than 37 percent of Medicare costs in 1980 and that the disabled had consistently higher reimbursement ratios than others in comparable diagnostic cost groups.

Table 2

Reimbursement ratios and percent of Medicare costs, by disability level and diagnostic-risk group

Diagnostic-risk group 1979	1979 percent of population	1980 reimbursement ratio	1980 percent of Medicare costs
Nondisabled			
Low risk[1]	72.0	0.76	54.6
Medium risk[2]	2.8	1.46	4.1
High risk[3]	1.8	2.15	3.9
Disabled			
Low risk	17.0	1.33	22.6
Medium risk	4.0	1.93	7.7
High risk	2.7	2.63	7.1

[1] Low-risk group includes the nonhospitalized and those hospitalized for nonmarker diagnoses.

[2] Medium-risk group includes, for example, stroke, ischemic heart disease, rheumatoid arthritis and osteoarthritis, and intestinal obstruction.

[3] High-risk group includes, for example, diabetes mellitus, chronic obstructive pulmonary disease, heart failure, and cancer.

SOURCE: (Gruenberg and Tompkins, 1986).

A combination of diagnoses and disability level in the AAPCC formula would help to address the problem raised earlier concerning sufficient access to medical care and adequate quality of care for the frail elderly. The establishment of separate rate-cells for individuals who are functionally limited would also provide a basis for an interface with the long-term care system (Gruenberg and Tompkins, 1986). However, accurate information about functional level is not currently available to HCFA, and a means of obtaining it would have to be developed.

Changing the payment system

Paying less

One of the simplest proposals for changing the payment system is to pay a smaller percentage of the AAPCC to HMO's. HCFA could try to overcome the financial effects of favorable selection into HMO's by reducing capitation levels across the board. But there are problems associated with this response. For one, paying less to HMO's could do even more harm to HMO's with unfavorable selection. Another problem is that paying less could exacerbate provider incentives to favorably select and to undertreat enrollees (Gruenberg and Tompkins, 1985a).

Partial capitation

Other options for modifying the current AAPCC approach include proposals to alter the manner in which HMO's are reimbursed and to introduce some amount of risk-sharing between HCFA and HMO's.

These might be labeled partial capitation systems because they involve combinations of prospective and retrospective reimbursements. For-profit and not-for-profit health insurers, as well as several public payers, have implemented various payment systems that involve the sharing of risk with providers. Being willing to maintain some of the risk for medical costs has significant advantages for the payer from both a policy and financial standpoint.

Potential benefits to HCFA of moving to a system of partial capitation are manifold (Wallack, 1985; Tompkins and Gruenberg, 1986). First among these, HCFA would stand to keep a greater percentage of the savings generated by HMO's. As it is now, achieving lower hospital use rates (relative to providers in fee-for-service) produces surpluses that are controlled by the plans themselves. In addition, this type of approach could have an effect similar to that of improved classification systems: Losses to HCFA or to HMO's that result from biased selection could be reduced substantially. A second benefit of partial capitation over full capitation is that the limitations on risk may help to foster the development of more HMO's and more participation among smaller and rural plans. Third, certain versions of partial capitation, such as Part B capitation, would offer a solution to the problem of establishing a workable system for physician reimbursement. A fourth benefit is that because HCFA would maintain risk, it would be able to remain a more active participant in the organizational and treatment policies that affect Medicare beneficiaries. This may include decisions about which providers are eligible for referrals, what their reimbursement rates are, how payments are structured, and so on. A fifth reason to implement partial capitation is that it offers a better opportunity to balance conflicting provider incentives: To control costs and to provide adequate quality of care to enrollees.

In full capitation, HCFA gives up the benefits of being a huge risk pool and transfers risk to much smaller budgeted plans. HCFA must face trade-offs by having plans manage the risk. Partial capitation would permit HCFA to limit the risk to plans so as to reap the benefits described above. However, the flexibility of this approach could be used to establish incentives that are too strong or too weak.

Some partial capitation models deal directly with the aggregate cost experience of HMO's; others introduce risk-sharing on an individual enrollee basis. An example of the former would be for HCFA to enter into aggregate risk-sharing arrangements with HMO's. Such a model would constrain the savings or losses to HMO's, according to some specified risk corridor or formula. A variation on this would be to capitate physician groups for the provision of Medicare Part B services and for the management of care under Part A, and to let HCFA pay institutional providers directly (Wallack and Donovan, 1985). In this Part B capitation model, risk-sharing would be specified for Medicare Part A costs only.

Part B capitation may offer HCFA the opportunity for rapid conversion to Medicare prepayment because Part B capitation would enable many provider groups who could not qualify financially as a CMP to participate. However, these efforts need to be carefully designed and monitored. Using risk-sharing under Part A to leverage providers represents a flexible but powerful tool that could create potentially strong incentives to reduce specialty-physician and hospital services.

There are a number of alternative models that incorporate the concept of partial capitation with risk-sharing defined on an individual enrollee basis. Ellis and McGuire (1986) proposed a general payment model in which providers are paid a reduced amount prospectively and are responsible for a certain fraction of all treatment costs. If their model were applied in this context, HCFA would pay a reduced capitation and a proportion of all costs on a retrospective basis. An alternative approach was suggested by Cookson (1983), who argued for the use of an individual stop-loss approach for Part A costs only, with a low outlier threshold (about $5,000). HMO's would continue to have responsibility for a proportion (e.g., 25 percent) of those costs in excess of the threshold, in order to maintain incentives for cost-effectiveness. Tompkins and Gruenberg (1986) have elaborated on this latter type of model by suggesting that the HMO deductible be defined over a multiyear period. Expanding the time horizon would permit the establishment of a moderately higher outlier threshold that, more typically, would be exceeded by repeatedly hospitalized, chronically ill individuals.

These types of models would have the general effect of reducing the differences in expected net profit between healthy and sick enrollees because retrospective reimbursements would be focused on the latter. This, in a sense, would improve the predictive ratio of a reimbursement system and would help to lessen the financial consequences of biased selection. In this respect, partial captitation may be seen as a practical forerunner of, or a complement to, health status formula adjustments. Actually, partial capitation has some of the features of a capitation adjustment based on actual HMO use. Although some have objected to allowing any provider influence on reimbursement rates (McClure, 1984), it may be viewed as a practical and prudent method of addressing serious potential problems with enrolling Medicare beneficiaries in capitated plans. Partial capitation introduces a degree of experience rating to the rate-setting process, the actual amount depending on the chosen values of model parameters. This has long been the main approach in the private sector for setting prices; with market mechanisms to be gradually introduced by Medicare, competitive pressures may be used as an additional check on provider behavior.

The estimated savings to the Medicare program that could accrue under a partial capitation payment system are shown in Table 3. The assumptions made in this table are that HCFA serves as the reinsurer

Table 3

Estimated Medicare savings under partial capitation, by payment model

Payment model	Medicare savings: HMO hospital costs = 80 percent of fee-for-service average	Medicare savings: HMO hospital costs = 60 percent of fee-for-service average
Individual stop-loss	$950 million	$1.9 billion
Part B capitation	$1.4 billion	$3.3 billion

NOTE: In this table, it is assumed that per capita Medicare costs are $2,000 for Part A and $1,000 for Part B; Medicare enrollment is 20 percent (about 4.75 million people). Medicare costs for this population would be $14.25 billion.

under each payment model; the individual stop-loss is set so that the reinsurance premium represents 50 percent of total expected costs; risk-sharing under Part B capitation specifies that the first 5 percent of acute hospital savings accrue to the plan, with the rest being returned to HCFA; per capita Medicare costs are $2,000 for Part A and $1,000 for Part B; and total Medicare enrollment is 20 percent (about 4.75 million people). With these assumptions, it can be seen that given a 20 percent reduction in Part A costs in the HMO, savings to HCFA are $950 million for the individual stop-loss model and $1.4 billion under Part B capitation. Similarly, assuming that HMO hospital costs are 40 percent below the fee-for-service average, savings to HCFA are about $1.9 billion for individual stop-loss and $3.3 billion for Part B capitation.

Developing alternative pricing strategies

A major impetus behind virtually all of the potential refinements in the reimbursement system has been the need to establish an effective means for adjusting base premiums for individuals or groups according to differences in expected costs. Methods like these are likely to be an integral part of any successful Medicare HMO reimbursement system, even if the current AAPCC methodology is replaced with other pricing strategies that make greater use of competition and market mechanisms.

Formulating a total reimbursement system requires that three types of choices be made. First, the basis of payment by which premium levels will be set must be chosen. The AAPCC is based on fee-for-service costs, but in the future it will make more sense to use capitation costs. Second, a mechanism for determining the price must be chosen. The options are for HMO prices to be payer determined, jointly payer-provider determined, or provider determined. Opportunities for the Medicare program to benefit from these mechanisms will vary, by geographic area, according to key factors such as the local market structure and Medicare's market share and influence. These factors will determine HCFA's relative bargaining strength, and will affect its willingness to rely on provider input for the setting of prices. Third, a program must be chosen to implement the reimbursement system. A payer-determined price would most probably be implemented through a formula. A payer-provider price would most probably be implemented by competitive bidding and direct negotiation. But in provider-determined price, it would be necessary for consumers to become price sensitive and shop among competing providers. Implementation of a voucher system would represent the kind of approach necessary to achieve this.

A formula approach

The current reimbursement system represents a formula method for establishing HMO capitation prices. Part of the motivation for developing alternative pricing strategies is to replace the use of fee-for-service costs as the basis of HMO premiums; one alternative is to use a capitation formula based on HMO costs. Because HMO costs are used in order to have a payer dictate prices, formulas severely limit the influence of providers and market dynamics in the determination of prices. Consequently, formulas generally have the distinct advantage of being easier to administer than other kinds of pricing models. However, a formula approach may work only if prices are potentially generous, or if Medicare has a substantial market share among relevant providers.

Competitive bidding

If a number of providers in an area are potentially interested in participating with Medicare, HCFA could opt for a competitive bidding process (McCombs, 1985). Having local plans submit bids would let competition between HMO's play a role in determining the price for the services contained in the Medicare benefit package. But care must be taken to avoid some potential pitfalls, including directly excluding valuable providers (Lave, 1984; McCombs, 1985).

Negotiation

In a locality or situation where HCFA must deal with very few providers, a possible method of establishing prices would be to negotiate individually with each HMO. This approach would put providers in a strong position to influence capitation levels. It can have particular advantages, including tailoring prices to take account of enrollee characteristics as well as special features of the provider and of the area. Wherever this approach may be implemented, negotiation or budget review methods would be complex and relatively expensive to administer.

Vouchers

If several separate entities wish to participate with Medicare, HCFA may be in a position to permit competing providers to determine their own rates. To implement such a system, beneficiaries may be given a fixed dollar amount to spend on medical care coverage, in place of their current entitlement to a fixed package of benefits (Luft, 1984; Friedman, Latour, and Hughes, 1984). This earmarked voucher could be redeemed at any participating plan that has openings for new enrollees. Beneficiaries shopping for the best value would take into account differences in providers' asking prices. Market forces stemming from cost-conscious consumers and multiple providers would presumably keep prices close to actual costs. There are a number of issues and potential drawbacks with a voucher system, including possible market segmentation (Luft, 1984).

In principle, the harnessing of competitive forces would reduce the problem of inaccuracies in the forecasting of expected costs. The fact will remain, however, that definite and perceptible differences will exist in the expected costs of individuals. One way or another, these differences must be reflected in the value of the voucher or in the relative prices associated with risk cells. If the value of the voucher is not allowed to vary, serious inequities could result: Either patients with chronic health problems might be treated poorly or, depending on patient selection, some insurers might inappropriately profit and others might suffer substantial losses. Determining relative prices will thus continue to require some form of uinform classification system across all HMO's.

Conclusions and recommendations

The current TEFRA program is run on a voluntary basis. HMO's decide whether or not to participate and when to withdraw, and Medicare beneficiaries make the determination whether or not to join a participating HMO. In the TEFRA capitation program, a key issue is whether the Government will win or lose. If the Government becomes a financial loser under the current system, additional HMO Medicare enrollment growth could translate into Medicare's loss. A consequence might be that Medicare will try to reduce HMO capitation payments from 95 percent of the community costs to 90 percent, 85 percent, or some lower rate. Such reduction would intensify the pressures to favorably select and to underserve enrollees. Ultimately, this scenario would result in the demise of the program.

Changes in the current reimbursement system seem to be necessary. The new system should, first, protect HCFA and providers against losses because of biased selection, and, second, carefully control and balance the perceived conflicting provider incentives to reduce costs and to provide adequate levels of service. We believe that the most desirable system will incorporate health status adjustments and partial capitation.

A major policy question is whether to test, in a demonstration program, the most promising alternative systems or to incorporate them into the current program and monitor the results. The importance of gauging effects because of provider response to any new system point to a demonstration, as does the lack of consensus concerning which of the proposed health status and partial capitation approaches are most desirable. However, the usual demonstration approach, where provider groups are free to choose whether to participate, would not allow one to address the major policy questions concerning provider reponse. This is because HMO's that would agree to participate in a demonstration program for AAPCC refinements, when the current reimbursement system is available as an alternative, would not be representative of HMO's as a whole. That is, HMO's that are prospering under the existing reimbursement formula would find their net incomes reduced under the alternative proposed. Moreover, the Medicare program might not want to continue operating under the current payment formula while awaiting the results of a demonstration.

We therefore recommend that HCFA consider modifying the current payment approach and implement alternative approaches that incorporate combinations of actuarially equivalent partial and full capitation, with and without health status adjustments. This would be a type of natural experiment, with HMO's being assigned randomly to a payment model. The experiment should include a careful evaluation during a 3-to 5-year period, and should contain a strong research component aimed at refining health status categories and testing implementation strategies.

The following models are recommended for testing and comparison:

- A health status model incorporating diagnostic categories associated with recent hospitalization.
- A health status model incorporating functional status and disability.
- A partial capitation model using an individual stop-loss with a low outlier threshold.
- A partial capitation model using Part B capitation.
- A partial capitation model using Part B capitation and incorporating a health status adjustment.
- The current reimbursement system (for comparison purposes).

HCFA should also continue work on other possible risk adjusters for capitation.

HCFA should initiate a significant demonstration program with a variety of options to set the base capitation rate. This would allow HMO payments to be more in line with HMO costs, rather than with costs in the fee-for-service. Here we see geographic areas taking on different payment arrangements. HCFA could choose to test a payment formula in certain areas that adjusts capitation levels according to demographic, health status, or utilization information about enrollees. In other demonstrations, Medicare payment levels could be determined by negotiation or bidding within a metropolitan area or

State. Arizona, because of its experience with the AHCCCS program, is one possible candidate.

Another approach that should be tested is to let providers determine their own rates. One alternative would be to link a voucher-like payment to the average costs of HMO's in an area. This would be administered like the Government Federal Employees Health Benefits Program, in which the Government voucher would equal a percentage of the highest cost plans. An experiment like this should be conducted in a place where premium differentials between HMO's and fee-for-service insurers are becoming pronounced, i.e., where HMO's have achieved high penetration rates and are primarily competing with each other. Another alternative would be to link a voucher-like payment to the prevailing employer premium. This strategy might be implemented by having large employers receive the Medicare capitation rate based on the experience of their own retirees. The employers, in turn, would negotiate rates with HMO's.

Many options now exist that offer hope for improvement in the Medicare HMO reimbursement system. Now is the time to test many alternative models that are judged to be consistent with the goals of Medicare. We have much to learn: The problem is to try to identify fair and efficient capitation payment systems. Then we must learn how providers and beneficiaries respond to these different systems; although a system might look good on paper, it might not work in practice. Only through demonstration can we be sure that the system that is finally selected will be the best for all.

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Rate adjusters for Medicare under capitation

by Joseph P. Newhouse

This article addresses three issues related to capitation. First, the average adjusted per capita cost (AAPCC) fluctuates with the mix of risks in the fee-for-service system. More sensitive adjusters in the AAPCC are needed. Second, the AAPCC, as now estimated, exhibits large geographic variance; so-called shrinkage estimators may help. Third, the AAPCC requires new adjusters to yield more homogeneous risk classes. Otherwise, the portion of the Medicare population under capitation may experience access problems at alternative delivery systems. Until such adjusters are developed, it seems better to rely upon a blend of capitation and fee-for-service than the present AAPCC.

Introduction

Until recently, Medicare has made little use of capitation, the practice by which an organization is paid a fixed annual amount per person to provide necessary medical services. Several recent trends, however, have given impetus to increasing Medicare's reliance on capitation.

First, it has become more widely accepted that group and staff model health maintenance organizations (HMO's), the premier examples of capitated delivery systems, practice a less expensive style of medicine, with little or no adverse effect on health (Luft, 1981; Manning et al., 1984; Ware et al., 1986). Many attribute the cost reduction to the incentive of capitation.[1]

Second, capitation is seen as an answer to the incentives in the prospective payment system (PPS) to "unbundle," that is, to shift services out from under the fixed price the hospital receives for the inpatient stay (Morrisey et al., 1984). A clear example of unbundling is the earlier discharge of patients from the hospital to a skilled nursing facility (SNF) or to home health care, both of which are reimbursed separately from the fixed payment made to the hospital. If Medicare paid one organization an annual amount and looked to that organization to be fiscally responsible for all services, the unbundling problem should be minimal.[2]

Increased reliance on capitation, however, makes more acute the problems involved in setting the capitated rate. In this article I examine three such problems: the present link between the capitation rate and fee-for-servie payments; the likelihood that the present method used to calculate the capitation rate introduces too much spread (variance) across geographic areas in the rates; and the characteristics of enrollees in a capitated system that should be accounted for in computing the rate. I will term these characteristics "adjusters," because they are used to adjust the rate.

Link between capitation and fee-for-service

Adjusted average per capita cost

The original Medicare Act made little accommodation to capitated delivery systems such as health maintenance organizations (HMO's). Indeed, it had no arrangements for a prospective capitated rate at all and simply provided that HMO's could be reimbursed at cost. After the 1971 Nixon White Paper endorsing HMO's, Congress enacted the 1972 amendments to the Social Security Act, which provided that Medicare could sign at-risk contracts with HMO's (i.e., could use a prospective capitated rate). The regulations implementing this legislation defined the adjusted average per capita cost (AAPCC). Conceptually, the AAPCC was the estimated cost to Medicare if the HMO enrollees had instead remained in the fee-for-service system. If HMO costs were less than the AAPCC, the HMO could keep one-half the difference, up to a maximum of 10 percent of the AAPCC.

The AAPCC is calculated by county, beginning with the cost to Medicare per fee-for-service enrollee.[3] One then adjusts that cost to the extent the HMO enrollees differ from the fee-for-service population of the county in terms of age, sex, welfare status, and institutional status.[4] The adjustment factors are based

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[1] See, for example, President Nixon's February 18, 1971, message to Congress on HMO's, as quoted in Iglehart (1982). See also Iglehart (1985). Although much commentary focuses on the incentives of capitation, some have pointed out that large multispeciality groups, whether prepaid or fee-for-service, may practice with a less hospital-intensive style (Nobrega, Krishan, Smoldt, et al., 1982; Gaus, Cooper, and Hirschman, 1976).

[2] I use minimal rather than nonexistent, because there might still be some attempt to substitute uncovered services, such as drugs, for covered services.

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[3] The statement in the text is a slight oversimplification. The AAPCC multiplies the national per capita cost in any year by the ratio of the county per capita cost to the national per capita cost, but the latter ratio is defined over a 5-year moving average.

[4] See Kunkel and Powell (1981); Beebe, Lubitz, and Eggers (1985); or the *Federal Register* (1985) for a technical description of the AAPCC.

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on national (fee-for-service) experience.[5] For example, there are five age groups considered by the AAPCC, and the adjustment factor for each age group reflects expenditures by that age group in the national program.

The AAPCC concept is still employed by Medicare in modified form, and, as the number of those enrolled in capitated systems expands, a difficulty is becoming increasingly evident. Because the AAPCC bases the capitation rate on the utilization of those remaining in the fee-for-service system, it is vulnerable if capitated systems, as a group, obtain a nonrepresentative group of enrollees within the AAPCC's age, sex, welfare status, and institutional status categories. In a given year, for example, HMO's might increase their enrollment of low-cost individuals within each category. If this were to happen, the Medicare program would overpay HMO's in two senses: 1) Medicare would pay an average rate (actually, 95 percent of the AAPCC) for a below-average cost group; and 2) when the AAPCC is recomputed next year, the average for those remaining in the fee-for-service system will be higher, and so, next year, HMO's will receive even more payment. The difficulty arises because the AAPCC links the HMO payment to what Medicare pays for fee-for-service enrollees.

Adjusted community rate

The Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 caused the regulations to change in 1985; TEFRA introduced the concept of the adjusted community rate (ACR), which partially addresses the vulnerability of the AAPCC just described. The ACR is based on rates an HMO or alternative delivery system charges for its private business (for patients under 65 years of age), adjusted for differences between the privately insured population and the Medicare population (Trieger, Galblum, and Riley, 1981). The HMO is paid 95 percent of the AAPCC, but if that amount exceeds the ACR, the difference must be used to provide Medicare enrollees additional benefits or reduce their cost sharing.[6] If 95 percent of the AAPCC is less than the ACR, however, the HMO need not extend additional benefits.

Because the ACR is determined by what HMO's charge in their private business, and not what Medicare pays fee-for-service providers, it is unaffected by HMO's enrolling a nonrepresentative (within age-sex categories) group of Medicare beneficiaries. Medicare payments are still vulnerable to nonrepresentative enrollment, however, because such enrollment affects the AAPCC, and any excess of 95 percent of the AAPCC over the ACR is funneled back to beneficiaries.[7]

Perhaps more important, the promise of the ACR to pay alternative delivery systems on the basis of a market rate, rather than an administratively determined rate, appears negated in practice because of major implementation problems. The difficulty arises from the adjustments necessary to make the Medicare rate comparable with the HMO rate for the under-65 population.

Adjustments must be made for both differences in benefits between the Medicare program and private business, as well as the higher rates at which the elderly use any given benefit.[8] Consider first the benefit differences. Some arbitrariness can be introduced in costing benefits the HMO provides in its private business that Medicare does not provide. For example, an HMO that provides its under-65 population a prescription drug benefit has an incentive to minimize the reported cost of that benefit because Medicare does not cover outpatient drugs; an HMO also has an incentive to maximize the reported cost of hospital and physician services that Medicare does cover.[9] The problem becomes even more acute if Medicare covers a benefit that the HMO does not provide in its private business (or provides to few individuals, such as home health services); in that case, Medicare does not observe a market rate and so cannot reimburse on such a basis.

In practice, however, the more serious problem is probably the adjustment for the higher use of the elderly. This adjustment has, in fact, been based on the observed use of the elderly relative to the non-elderly within any given HMO. Such an adjustment clearly moves away from the notion of a market price for the elderly that the HMO takes as a given. If, for example, the HMO decides to increase its services to the elderly by 10 percent, while keeping constant its services to the nonelderly, the HMO's reimbursement would rise 10 percent, up to a limit of 95 percent of the AAPCC. Using factors based on national experience to adjust the HMO's rate would eliminate this problem, but would raise another: Both the aged and the non-aged who are enrolled in any given HMO may differ from the national population. Thus, use of national experience would raise the same problem that now plagues the AAPCC, namely, how to adjust rates for varying characteristics of those enrolled in the HMO.

Excessive geographic variance

As noted earlier, the AAPCC is based on mean fee-for-service costs in the enrollee's county of residence. Some have suggested that the resulting rates seem to have too much spread. Greenlick (1985), for example, notes that the five AAPCC's in the five counties that make up the Portland (Oregon) metropolitan area vary by a factor of 2, and it does not seem likely that expected annual costs of caring for Medicare beneficiaries vary that much among contiguous counties.[10]

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[5] The three categories of Medicare beneficiaries, the aged, the disabled, and those with end stage renal disease, are treated separately in making these calculations.

[6] The HMO could accept reduced payments, but there is clearly no reason to do so.

[7] Regulations preclude HMO's from charging a sham rate on a tiny volume of private business by a requirement that one-half (or more) of the enrollees not be Medicare or Medicaid beneficiaries.

[8] The elderly use services at more than three times the rate of the nonelderly (Fisher 1980).

[9] In particular, an HMO will seek accounting rules that allocate as much joint cost as possible away from services such as drugs; for further analysis of this problem see Danzon (1982).

Part of the problem may be the use of the (sample) county mean to estimate the AAPCC for the county. Consider what turns out to be an analogous problem, estimating the end-of-season batting averages of baseball players from their first 50 at bats. Those who follow baseball know that there will be more spread in batting averages after only 50 at bats than at the end of the season.

Recent advances in statistics show that if one wants to predict the batting average of each player at the end of the season, one can do better than simply using his average after 50 at bats. Similarly, if one wants to estimate the true (population) mean expenditure rate for many counties, one can do better than use each county's sample mean.

The better method uses a weighted combination of the individual county mean and the mean of a larger population (the metropolitan mean, for example, or the mean of several rural counties). The weight on the individual county mean is less as the spread among all the county means decreases and as the number of county means being considered increases. Such a procedure shrinks all the county means toward the mean of the larger group (i.e., it will reduce the spread in the county means); this procedure can be shown to have lower mean square error for estimating the true mean of each county than using the sample mean for each county.[11]

One may ask why the county is the appropriate geographic area to use rather than, say, the mean of a larger area, perhaps a metropolitan area. Essentially, the choice of area size is a tradeoff between the reduction in variance (or noise) one would obtain with a larger area versus the (likely) increased heterogeneity within the area; for example, the mean of a metropolitan area would mask any true differences in the means among the various counties it comprises. Exploring this tradeoff would be a worthy future research project.

Adjusting rates for beneficiary characteristics

One can divide the problem of setting rates into that of setting the level of rates (i.e., the base price or average payment per person), and setting the structure of rates (i.e., appropriate differences across persons). I am principally concerned with the rate structure and have only a brief initial comment on the issue of level. The AAPCC uses the fee-for-service system to set the level. The main alternatives involve the alternative delivery system's quoting a price. Beneficiaries could be given vouchers and told to shop among systems, or systems could be asked to bid. In either case, however, the issue would arise of how the price (or value of the voucher) should vary with the characteristics of the beneficiary.

Another way to frame the same question is to ask: What variables should be included in the AAPCC? That is, what variables should be used to adjust for differential risk of treatment among people who are enrolled in a capitated health plan? As noted earlier, the present AAPCC uses age, sex, welfare status, and institutional status, but there is near universal agreement that this list is inadequate because it explains only 0.6 percent of the variance in Medicare expenditure (Lubitz, Beebe, and Riley, 1985). Although 0.6 percent is, clearly, too low a number, it is less clear what amount of variance one should seek to explain.

In principle, one wants to estimate the expected expenditure for each individual; actual expenditure in any year will differ, depending on how sick the person is that year.[12] Thus, one wants to know how much expected expenditure varies across people. In a longer version of this paper (Newhouse, 1986), I critique the literature on this issue, and conclude that at least 20 percent (and probably much more) of the variance is predictable by an alternative delivery system.

Because the present adjusters explain only a tiny fraction of the variance in expected expenditure, there will, necessarily, exist a group of people whom the delivery system perceives as having higher expected costs than it is reimbursed for. Although each delivery system makes money on some people, any such system can always improve its bottom line if it does not have the "losers" as enrollees. This is especially so if the delivery system does not enroll the top few percent of spenders (e.g., the top 5 percent account for one-half the total costs). Such high-spending individuals, to the degree the delivery system can predict their expenses, are like the queen of spades in a game of Hearts: each system may well try to send these individuals elsewhere; those systems that do not may soon find themselves saddled with so many such individuals that the systems must send them elsewhere or go broke. I call this diversion of some patients "the problem of selection."

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[10] Part of this variation, perhaps a large part, reflects style differences among providers (Wennberg and Gittelsohn, 1973; Chassin et al., 1986). The shrinkage estimator proposed here does not address that issue, but rather the problem that the actual mean costs per county in any year may be a noisy estimate of expected costs because of the skewness of the expenditure distribution.

[11] For a nontechnical account see Efron and Morris (1977), who use the batting average example. A very similar problem to estimating the AAPCC for each county is to estimate the true rate of false alarms from any given fire alarm box. The solution to this problem is given in Carter and Rolph (1974). Methods proposed by Efron and Morris (1972) are also relevant for this problem.

[12] I do not take up the normative issue that Medicare may not wish to pay for some services (e.g., harmful or nonefficacious care). To keep the discussion focused on the problem of heterogeneity among individuals, I will treat the actual expenditure by each individual as proportional to (more specifically, a linear function of) the care Medicare wishes to pay for. Also, I note that the actual AAPCC uses location, which explains some additional, presumably modest portion of the variance.

If there is a residual fee-for-service system, high-spending individuals could tend to remain in that system. In such a case, those whose expected costs are less than the capitated rate will tend to enroll in alternative delivery systems.[13]

Medicare, in fact, attempts to prohibit selection by regulations, but such regulations appear, ultimately, unenforceable. If physicians want to discourage particular patients from seeing them, there are many subtle ways to do so (e.g., appearing unsure about the patient's diagnosis, being curt, or keeping the patient waiting).

A contrary view

On the basis of the data sketched earlier and presented in more detail in Newhouse (1986), the case that the current version of the AAPCC needs modification seems compelling and is, in fact, widely accepted. Nonetheless, a contrary view holds that the problem of selection is exaggerated (Pauly, 1984, 1985). Pauly believes that the empirical evidence for the actual extent of biased selection is weak (see next section). Pauly also argues that the theoretical case for inefficiency as a result of selection is based on amodel described by Rothschild and Stiglitz (1976), the inefficiency therein being that good health risks cannot obtain as much insurance as they wish. Pauly correctly notes that no one has presented evidence that establishes such an inefficiency, and he draws the overall conclusion that "as long as one avoids things like community rating and too easy switches across policies, adverse selection need not be a difficulty."

Pauly's dismissal of adverse selection follows logically from his premise, but the premise is of doubtful validity. I take "avoids . . . community rating" to mean not paying the same amount for individuals with different expected costs; thus, either the capitated rate is set individually, or nearly homogeneous risk groups are defined, but the 0.6 value for explained variance suggests that we are a long way from homogeneous risk groups.[14]

Although community rating is the principal issue, the avoidance of "too easy switches" in the Medicare program is also an issue; enrollees can, at present, change plans every month. This regulation on plan changing probably should be changed to once a year, the general standard in the private sector. In sum, because the Medicare program, under current arrangements, can scarcely be said to have avoided community rating, and because plan switches by Medicare beneficiaries seem easy, we have no reason, on a priori grounds, to be optimistic about selection.

Some object to individual rating on the grounds that it fails to insure against bad luck at birth; that is, sickly individuals would face higher premiums because they have higher expected costs. If desired, however, more sickly individuals could be given higher vouchers; in any event, this issue of equity is not the issue I am addressing here. Rather, I wish to focus on the extent to which individual rating is feasible, i.e., what adjusters can be used, and the consequences, if the adjusters actually used are not very good.

Evidence on adverse selection

The argument to this point has been that we have some indirect or theoretical reasons to expect that adverse selection could be a serious problem. Such an argument certainly is not as compelling as direct evidence. But what evidence is there that adverse selection is an important empirical problem? Unfortunately, there is rather little direct evidence one way or the other. Much of it comes from comparing those who either enroll in, or disenroll from, HMO's with those who remain in whatever system they have chosen; these two generic types of studies yield conflicting evidence.

Evidence on enrollment

Several studies have compared use rates of HMO enrollees and nonenrollees at a time prior to HMO enrollment, when both groups were in the fee-for-service system (Eggers, 1980; Eggers and Prihoda, 1982; Luft, 1981; Jackson-Beeck and Kleinman, 1983; Buchanan and Cretin, 1986). These studies tend to show that when HMO enrollees and non-HMO enrollees were both enrolled in the fee-for-service system, the HMO enrollees used less care.[15] For example, Eggers (1980) compared the hospitalization rates of Medicare beneficiaries who enrolled in an HMO with those who remained in the fee-for-service system; the rates were for a time just prior to their choice, when both groups were in the fee-for-service system. The factor-of-2 difference between the two groups, as shown by the two columns in Table 1, suggests strong selection.

Evidence on disenrollment

If selection is a problem, one might expect to see that disenrollees from HMO's use more services than those who remain in HMO's. A number of studies of disenrollees have been conducted (Wollstadt, Shapiro, and Bice; 1978; Wersinger and Sorenson, 1982; Mechanic, Weiss, and Cleary, 1983; Hennelly and Boxerman, 1983; Griffith, Baloff and Spitznagel, 1984; Lewis, 1984; Buchanan and Cretin, 1986). In contrast to the studies of enrollees, most studies of disenrollees show little, if any, evidence of adverse selection. (Buchanan and Cretin [1986] are an exception.) Can we conclude from these studies that adverse selection is only a problem in theory and that we can proceed toward capitation without much concern for additional adjusters?[16] I think not.

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[13] The systems make extra profits on all but the marginal cases; these profits, however, may be competed away in amenities, just as airlines with regulated fares competed away profits by having frequent, but not very full, flights. (Held and Pauly, 1983). In any event, expenditures by the Government will rise.

[14] If the alternative delivery system states a price for each individual that reflects that individual's expected costs, then selection should not be an issue. This appears to be what Pauly has in mind. However, the common situation seems that of a price for a heterogeneous class of enrollees, viz., the AAPCC (Newhouse, 1984).

[15] Buchanan and Cretin (1986) note that in the year immediately preceding HMO enrollment, utilization was even lower than in the years before that for HMO enrollees, suggesting that they were postponing utilization until they were enrolled in the HMO.

Table 1

Comparison of hospital days of care between persons choosing a health maintenance organization and those remaining in fee-for-service: 1974-76

	Days of care per 1,000 persons	
Year	Joined HMO in October 1976	Remained in fee-for-service
1974	1,152	—
1975	849	1,761
1976	731	1,929

SOURCE: (Eggers, 1980)

One should distinguish four reasons for disenrollment: 1) mandatory disenrollment: The individual moves out of the HMO service area, or changes employers, and the HMO is not offered by the new employer; 2) disenrollment because of a change in the relative prices of the HMO and fee-for-service options (or perhaps some change in the non-price amenities of the two systems of care, such as the HMO's closing a clinic); 3) disenrollment because the person made a mistake in enrolling; and, finally, 4) selection, meaning HMO-induced disenrollment of those with expenditures expected to be above average.

One should expect that large samples would be needed to detect adverse selection because the first three causes of disenrollment could tend to obscure it. The reason may become clearer by considering each category in turn.

Mandatory disenrollment, the first group, can for the most part be regarded as outside the control of the HMO. Hence, for purposes of detecting selection (signal), it acts like noise. Some studies distinguish mandatory disenrollment, but not all do.

Those who disenroll because of a change in relative prices, the second group, are those who are nearly indifferent between enrollment in fee-for-service and the HMO (e.g., those who live quite far from an HMO clinic or who, for the monetary savings, are just barely able to "tolerate" an organized system of care). The group that is nearly indifferent between belonging to the HMO and the fee-for-service system may be only weakly related to the group that the HMO would like to see disenroll; hence, the nearly indifferent group, too, may act mostly like noise for purposes of detecting selection.

The third group of disenrollees, those who made a mistake, may well be the largest group of disenrollees in any given period (especially if relative premiums have not changed). It is probably impossible to be certain, without actually joining, just how much one will like care at the HMO.[17] Thus, a number of people will join with the expectation that they will prefer the HMO, only to find that they made a mistake, and withdraw. This is especially true of new HMO's; for well-established HMO's, one may be able to form an idea of how well one will like the HMO by speaking with current members.[18]

Detecting HMO-induced disenrollment is more difficult because of the skewness of the expenditure distribution. The HMO need only induce a few people to leave in order to have a substantial effect on profitability (1 percent of the population accounts for about one-quarter of the expenditure on medical care), but the same skewness makes it difficult to detect a difference in spending between those who leave and those who stay; differences in medical expenditures between two groups tend to have large standard errors unless samples are on the order of several-thousand individuals. Only quite large HMO's will have that many disenrollees in a year. The studies in the literature mostly have samples of disenrollees in the hundreds.[19] The study with the largest sample (Buchanan and Cretin, 1986) also was the study that found evidence of adverse selection among those who disenroll.

In sum, the studies of disenrollment may simply have failed to detect selection behavior. We cannot be very confident from their negative results that selection behavior is not an important problem.

Other evidence

The Rand Health Insurance Experiment randomized into an HMO individuals who were receiving care in the fee-for-service system. When analysts compared their use rates with those of individuals already enrolled in the HMO, they found virtually no difference, implying no selection (Manning, Leibowitz, Goldberg, et al., 1984). For present purposes, however, this finding must be regarded as merely one observation; it is not strong evidence that there would be no selection in a world of competing delivery systems.[20] A related point is that virtually all existing evidence comes from studies of communities with one HMO and a fee-for-service system. As competition among capitated systems increases, selection behavior may well increase.

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[16] All of these studies were of non-Medicare populations and the AAPCC was not involved. These studies are relevant, nonetheless, because few, if any, adjusters were included in the premium.

[17] In the jargon of economics, HMO's are an experience good.

[18] For this reason, it is not surprising that Wollstadt, Shapiro, and Bice (1978) found that the first cohort of enrollees in a new HMO exhibited the highest disenrollment rates.

[19] Griffith, Baloff, and Spitznagel (1984) show significantly fewer physician visits among disenrollees, as does Lewis (1984). They interpret this as evidence against selection, but the case is weak because the result could be true if the second and third groups, described in the article, have lower true mean rates of visits. Any enrollees with above-average-expected expense will still find that every organization will have an incentive to purge them.

[20] To conclude from this finding that selection will not occur would be like observing community rating at Blue Cross in the 1930's and concluding that experience rating will not occur.

Additional adjusters for rate formula

Despite the agreement that the current AAPCC is inadequate, there is considerable disagreement on what should be done about it. One may approach the issue by identifying some desirable characteristics of adjusters, beginning with the most important.

- The set of adjusters should result in reasonably homogeneous categories with respect to expected expenditure, just as the diagnosis-related group (DRG) system is intended to be a reasonably homogeneous classification system for hospital cases; a necessary condition is that an adjuster predict medical expenditure. (This is the criterion that I have been emphasizing.)
- An adjuster should not have excessive collection costs.
- An adjuster should be reasonably cheap to audit or verify, so that it is inexpensive to keep fraud to a minimal level.
- An adjuster should not induce changes in behavior by patients so they can be classified in a category with higher reimbursement rates.

Disability status

Lubitz, Beebe, and Riley (1985) have shown that disability status before age 65 predicts medical expenditure. Table 2 is taken from their paper; it can be seen that those disabled before the age of 65 spend 56 percent more after the age of 65 than those not disabled (1,704/1,091 = 1.56).

Moreover, Lubitz, Beebe, and Riley (1985) present some evidence of selection on prior disability status. In two of three demonstration HMO's, the percentage of formerly disabled enrollees was 30 to 38 percent less than in a comparison fee-for-service group; in the third HMO, the percentages were nearly equal.

Disability status seems like an almost ideal adjuster. Because it exists in administrative records, the cost of collecting it is small. So too is the cost of auditing it. If disability status is included, it seems unlikely to much affect behavior in an undesired way; i.e., it seems unlikely that there is much additional incentive to become disabled before age 65 if the Medicare formula recognizes disability.[21]

Table 2

Average expenditures for Medicare enrollees age 65 or over, by age and prior disability status: 1980

Age	All persons	Formerly disabled	Not formerly disabled
Total	$1,127	$1,704	$1,091
65-69 years	846	1,635	748
70-74 years	1,008	1,761	958
75 years or over	1,440	2,014	1,433

SOURCE: (Lubitz, Beebe, and Riley, 1985)

The only difficulty with including disability before the age of 65 is a short-run practical problem: The current formula includes institutional status, but there are no data on institutional status in routine administrative data and no data on disability status in the survey data used to set the current adjustment factors.

Even if this difficulty is overcome, adding disability status to the formula is likely to increase explained variance by only a modest amount. Lubitz, Beebe, and Riley (1985) do not give data on how much variance disability status explains; however, only about 3 million disabled under 65 years of age were eligible for Medicaid in 1983 (*Health Care Financing Review*, 1984). Hence, the vast majority of aged do not become disabled before the age of 65, and disability status cannot explain any variance within that group.[22] As a result, although there is a good case for adding disability status as an adjuster, it almost certainly cannot come close to solving the problem.

Health status and functional status

The case for adding health status variables seems straightforward on the surface. Health status measures are known to be important predictors of variance (Manning, Newhouse, and Ware, 1982). For example, individuals with chronic health problems, such as cancer or congestive heart failure, will tend to have higher expected costs than individuals without such problems (assuming the present AAPCC adjusters). For that reason, McClure (1984) and Thomas et al. (1983) have strongly argued for research into the means by which health status measures could be added to the formula.

Unfortunately, there are important practical problems in adding health status measures (Lubitz, Beebe, and Riley, 1985). Not surprisingly, these problems are conceptually similar to those associated with the prospective payment system (PPS), which can be seen as an effort to incorporate clinical or health status adjusters into the method for paying hospitals. The problems may be briefly summarized as follows:

(1) Patients with the same condition might warrant more or less intensive treatment, depending on the severity of that condition. For example, a physician might choose not to treat someone with a diastolic blood pressure of 95 mm Hg, but treat immediately someone with a diastolic blood pressure of 125 mm Hg. Yet, if there is simply a fixed additional amount for those with hypertension, the payment system is not recognizing any costs associated with treating

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[21] If this were a problem, one might make the requirement that one had to be disabled at an earlier age than 65, for example, 60.

[22] Any variance within the disabled group will also remain unexplained.

those with more elevated levels of blood pressure (e.g., more frequent follow-up or other increased intensity of treatment). This problem is analgous to the so-called "severity" problem (within-group variance) in PPS.

One solution, in principle, to the severity problem is to vary the payment with the level of a physiologic measure (e.g., pay more for the person with a diastolic blood pressure of 125 mm Hg). However, treatment may change the level of the physiologic measure. If one pays a certain amount for someone with a natural diastolic blood pressure of 95 mm Hg, but an additional amount for someone with a reading of 125 mm Hg, one must decide how much is paid if medication lowers blood pressure to 95 mm Hg. Such an individual clearly costs more to treat than an individual with a naturally occurring blood pressure of 95 mm Hg. At first glance, it may seem desirable to pay on the basis of the uncontrolled value (in the example, 125 mm Hg), but if the person's blood pressure is, in fact, controlled, the uncontrolled value would not be observed, and it would be dangerous and unethical to try to observe it.

A similar problem arises if, as some suggest, payment is based on maintenance or improvement of health status. On average, the health of elderly people can be expected to deteriorate; an organization paid on the basis of maintaining or improving health status faces a Sisyphean task. Conceptually one would like to vary payment on the basis of deviations from expected prognosis, but physicians may disagree on expected prognosis.

(2) Just as it is possible to engage in DRG creep (Carter and Ginsburg, 1985), it appears possible to manipulate some health status measures used to adjust capitation amounts, particularly self-reported health status measures. For example, if Medicare pays more for patients who report their health as poor instead of fair, there is an incentive for the patient and the provider to collude against the Government to report the patient's condition as poor.[23]

(3) Just as comorbid conditions complicate setting a price for PPS, they complicate setting a price in a capitated system. An individual who is healthy, except for hypertension, may be relatively easy to rate. An individual with hypertension, diabetes, kidney failure, and congestive heart failure may require more treatment than merely the adjustments implied by the four diagnoses separately.[24] As was done with PPS, one can simplify by equating all conditions and simply making an adjustment for the presence of any comorbid condition, but some conditions may be "more equal" than others.

(4) Just as implementing DRG's added data collection expense, some point out that collecting health status data would add expense. Indeed it would, but McClure (1984) argues implicitly that the collection cost issue has been overstated. He notes that delivery systems would need to collect measures of health status for their own purposes, and he would place the onus of notifying Medicare about the enrollee's health status on the delivery system. I agree with McClure's judgment that the delivery system can collect health status data relatively cheaply, but he does not address the issue of auditing, which may not be a straightforward task. This would be particularly true if the health status reported to Medicare by the delivery system subsequently changes, either for natural reasons or because of treatment. Hence, collection costs do appear to be an issue.

(5) Just as the weights assigned to DRG's must be updated to account for new technology, so must capitated payments. The prices paid for new technical procedures, however, are a problem in the present fee-for-service system as well, but perhaps less of a problem because one need not project annual utilization.

These arguments should not impede a research effort on adding health status measures, but they do suggest that a small-scale effort is unlikely to meet with much success (see also Lubitz, 1985). Most research to date has focused on the use of functional status as an adjuster (Lubitz, Beebe, and Riley, 1985; Thomas and Lichtenstein, 1986). Functional status describes limitations on mobility and, like disability status, it predicts Medicare expenditure (controlling for the four variables now in the AAPCC). Also like disability status, functional status is clearly observable by the delivery system. Both these considerations argue for the inclusion of functional status in the payment formula, but, unlike disability status, data on functional limitations do not now exist in administrative records, so special collection efforts would have to be instituted. Moreover, like self-reported health status, data on functional status may be vulnerable to manipulation (the analog of DRG creep).

Patients at high risk of death

Research into inclusion of health status measures as adjusters might begin by finding measures that identify patients at high risk of death. Such patients will often be known to the delivery system to have higher expected expenditure. An organization that chose to engage in selection might well attempt to send such patients elsewhere at a time of open enrollment.

Some argue that an HMO would not want a reputation for dumping its patients and therefore would not do so, but if an HMO engaged in this behavior only occasionally, its actions might well not be detected and it would not acquire such a reputation. See the Technical Note for the example that shows the difficulty of using mortality rates to detect selection. The difficulty also applies to using mortality rates as an adjuster. Nonetheless, if the difference between the reimbursement and expected cost for a patient at high risk of death is great enough, the profits to be made by dumping even a few patients could be substantial. Consequently, the possibility of dumping at least some patients at high risk of death needs to be taken seriously.

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[23] Presumably, Medicare could prevent the provider's overtly encouraging the patient to give fraudulent answers. Patients may discover, however, that at least some providers give more attention and courtesy to patients for whom they receive more reimbursement. This may well encourage some patients to fudge their answers.

[24] Technically, there may be a very large number of interactions to estimate.

The implication is that there should be a higher capitation rate for such patients, but the practical problems of defining such an adjustment remain formidable. Indeed, physicians have considerable discretion in treating patients at high risk of death (Garber, Fuchs, and Silverman, 1984), so the magnitude of the adjustment is also a difficult question.

Prior utilization as an adjuster

Several analysts (Anderson and Knickman, 1984a, 1984b; Lubitz, Beebe, and Riley, 1985) have investigated adding measures of past utilization to the AAPCC. They demonstrate that past utilization predicts future expenditure; moreover, it is observable both by the HMO and by an agency such as the Health Care Financing Administration (HCFA), and the data are cheap to collect. A different group of analysts (Thomas et al., 1983; McClure, 1984) believes past utilization is inappropriate to include as an adjuster because of its incentive effects. McClure, for example, notes that inclusion of prior utilization will reward a patient of a more "elaborate provider" (or might reward the provider himself or herself) and penalize the patient of a more "conservative provider."

The response to this objection on the part of those proposing past utilization as an adjuster is not entirely satisfactory. They note that the adjustment would not be so large that a delivery system could profit by adding more services, by which they mean that it would not pay to take healthy people and, say, hospitalize them. That argument, however, ignores the fact that decisions are made at the margin. Although it will not pay to hospitalize a healthy person, a not-very-sick person may be kept out of the hospital if there is no adjustment for prior utilization, but may be hospitalized if there is such an adjustment. If prior utilization is included in the formula, more elaborate care of a given patient will, in general, be rewarded; McClure's argument is correct. His conclusion that utilization should be excluded from the payment formula, however, does not necessarily follow.

Where to from here?

McClure (1984) and Lubitz (1985) make a compelling case for a greater allocation of research resources into methods to improve capitation. McClure notes the great disparity between the resources that have gone into developing PPS and those that have gone into developing a method for adjusting capitation rates; he argues that at least as sustained an effort as went into the development of DRG's should go into the development of risk-adjusted capitation methods.

I agree, although I would caution against taking resources from the effort to refine PPS in order to develop capitation methods. Well-developed capitation schemes are, at best, several years in the future; in the meantime, there are several known technical problems with PPS. Given the size of the Medicare program and current research budget levels, it is important that efforts to resolve or ameliorate those problems not be diminished.

Part of the greater research effort concerning capitation ought to include some demonstrations of new capitation schemes (just as the New Jersey experience with DRG's could be thought of as a demonstration of PPS). The use of functional health status and other measures of health status can be tried out in a demonstration. The introduction of disability status as an adjuster may be straightforward enough as not to warrant a demonstration.

In addition to the research effort, however, consideration should be given to a blend of capitation with fee-for-service. For example, a delivery system might receive one-quarter of the current or, better yet, a refined AAPCC for each person it enrolled, while three-quarters of its payment might be based on fee-for-service. To do so would show recognition of the imperfect nature of all adjustment methods now available; although research should improve matters, it may well not produce a workable solution.[25] Consequently, some thought should be given to the situation in which the available adjusters are not fully satisfactory. In such a situation, a blend has much to recommend it; the weight on the capitated portion might increase as adjusters became better.

Moreover, for the period during which there is not a completely satisfactory set of adjusters, a blend seems to be an improvement over capitated rate adjusted for prior utilization.[26] The latter is similar to a blend of capitation and prior use, with a weight on prior use given by a regression coefficient. A blend with current use shows recognition of changes in health status as they occur, rather than with a delay. Moreover, such a blend avoids the problem that no past utilization data are available for a new cohort of enrollees.

On the other hand, those who object to the incentive effects of prior utilization will probably object even more strongly to current utilization as the basis of payment, given its presumed stronger incentive effects. The differences in incentive effects between using prior or current utilization, however, turn out to be more apparent than real. For example, because payment for prior utilization occurs in the subsequent year, it is discounted; however, the discount factor is not likely to be large enough to be of any quantitative importance.

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[25] Analysts at HCFA, for example, believe that "no AAPCC will ever be ever be perfect" (Beebe, Lubitz, and Eggers, 1985). Technically, we are in a second-best world.

[26] The two proposals are not strictly comparable. I propose using an unspecified weighted average of current utilization (or fee-for-service) and capitation; those recommending prior utilization, in effect, establish a weight for it through the regression coefficient that prior utilization receives. For purposes of this discussion, assume that the weight on current utilization is about the same as for past utilization.

A second seeming difference in incentives between use of prior and current utilization turns out, on closer inspection, also to be unimportant. If an individual disenrolls or dies, the HMO could receive no adjustment if prior utilization is used as an adjuster, because there is no future AAPCC to be adjusted for that person; however, the HMO does receive an adjustment if current utilization is used. Thus, use of prior utilization may seem to be bad in the case of death (the HMO receives no compensation for the extra expenses before death) and good in the case of disenrollment (it reduces the incentive to dump). In fact, however, the two methods can be made equal on this score. If prior utilization is used as an adjuster, an extra payment could be made, after the fact, for a deceased person. Similarly, if desired, payment based on current utilization could be retroactively scaled down for those who voluntarily disenroll.

Hence, I conclude that prior and current utilization are similar in their incentive effects (or can be made so), but current utilization is a more sensitive measure of predictable variation in expected cost.

More generally, many believe that incentive problems result if any part of the payment is based on utilization, either prior or current, but this belief is correct only if fee-for-service prices exceed marginal cost.[27] Unfortunately, given the administered price nature of insurer reimbursement and the extreme difficulty of observing marginal cost, prices exceeding marginal cost may be common. Although some worry about excessive fee-for-service utilization for this reason (and because the patient is insured), others worry that pure capitation will produce underutilization. If both worries are justified, a blend of the two should produce an appropriate amount of utilization.[28]

I have left for future research the topic of optimal weights in a blend. It is not obvious, however, that the weight on utilization should be the same for every enrollee, as the current proposals for incorporating prior utilization as an adjuster implicitly suggest. For example, in classes of enrollees with higher variances (e.g., the very old), capitation will require that the HMO accept higher risk. Perhaps in such classes one should weight the fee-for-service system payment more heavily. More generally, the "shrinkage" methods referred to in the section on geographic variance may well prove useful for determining weights.

It is also likely that at least some HMO's will object to anything less than complete capitation for the same reason that the original Medicare reimbursement regulation was not popular: HMO's prefer not to bill fee-for-service. Two responses might be made:

(1) Prior to PPS, hospitals were not set up to bill using DRG's. Just as hospitals have adapted to DRG's, so too could HMO's adapt to fee-for-service. Indeed, most HMO's already have a capability for generating fee-for-service bills for cases such as those covered by Workmen's Compensation.

(2) HMO's may argue that they would not engage in unethical behavior, such as dumping, despite the monetary incentive to do so. Although I am skeptical that all HMO's would show such restraint,[29] one could put the argument to the test, using a blend as a fallback position.

Goals and means

The Medicare program seeks to achieve several goals; two that are central to the present argument are economic efficiency and access for beneficiaries. Fee-for-service (with prices above marginal cost) poses no access problem, but is clearly inefficient and costly. The movement toward reform embodied in PPS suggest that taxpayers are unwilling to pay the costs of a fee-for-service system with prices above marginal cost. Capitation may stimulate greater economic efficiency.[30] But capitation poses an access problem for high-expected-cost beneficiaries if the capitated rate is applied to a group with diverse expected costs. Thus, it appears difficult to satisfy both goals simultaneously. In choosing how to compromise between these two goals, a blend opens more options than merely the two extremes of pure fee-for-service or pure capitation.

There is one other argument for a blend. Although moving partway toward a capitated system, using a blend of capitation and fee-for-service, will be seen by some as limiting the gains of a pure capitated system, it also limits the risks. At a minimum, therefore, it would seem to be a good candidate for a transition strategy.

Technical note

Anderson and Gertman (1983), cited in Lubitz, Beebe, and Riley (1985) have proposed using mortality rates among enrollees in each system to detect selection. Some might also propose that mortality rates could be used to adjust rates because they reflect health status. These proposals have both incentive and statistical problems. The incentive problem is that HMO's with poor results on mortality are implicitly rewarded, and those with good results may be penalized (i.e., they look as if they are dumping).

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[27] Pauly (1980) points out that fee-for-service prices equal to marginal cost will give the physician an incentive to act as a perfect agent; moral hazard remains.

[28] For a similar argument in a different context, see Ellis and McGuire (1986) and Ginsburg, Newhouse, Mitchell, et al. (1986).

[29] Elsewhere (Newhouse, 1982) I have made the analogy with community rating and experience rating. Even if a given group of HMO's fully intend to community rate, the actions of others may force them not to do so.

[30] I have only touched on the problems of setting a proper price level. Without a proper price level, capitation will obviously not be efficient either.

Statistically, an organization that was dumping some patients at high risk of death may stand a good chance of remaining undetected. Suppose there are two HMO's, each with 10,000 Medicare beneficiaries. Suppose 500 (5 percent) of the beneficiaries die annually in both organizations. Now, suppose one HMO tries to persuade some patients at high risk of death to move elsewhere. Suppose, to keep the exposition simple, all the patients at high risk of death will die with certainty. If those known to be at high risk of death are 20 percent of all deaths in the Medicare population (100 persons in the example) and one HMO sheds one-third of those individuals, it loses 33 patients; its true death rate falls to 4.67 percent. Using a 95 percent chance of Type I error, the chances are only about 1 in 3, in any given year, that one will detect a difference between the two HMO's with these size samples. (This assumes that the other HMO does not gain these individuals, but that they are dispersed among providers.) Although chances would be higher with a larger sample, I have optimistically assumed that the true mortality rates in the two HMO's are known to be the same (or that one can perfectly adjust for any difference). In practice, there would most likely be a considerable debate about whether true mortality rates in the two HMO's were equal (just as teaching hospitals argue for higher PPS payments on the grounds that they treat more severely ill patients).

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Medicare capitation and quality of care for the frail elderly

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Previous studies have shown that the quality of care provided in health maintenance organizations (HMO's) is either similar or better than that in fee-for-service settings; however, few studies have included sufficiently large numbers of older persons. Although it is reasonable to believe that healthy older patients will do as well in HMO's as younger people, the outcome for the frail elderly is less certain. This population may not do as well in the conservative medical practice environment of HMO's, and decreased hospitalization may have detrimental effects on their health. On the other hand, this population may benefit from the improved continuity of care and potential for comprehensive assessment in HMO's. The quality of care received by the frail elderly will be an important test of the success of Medicare capitation.

Introduction

Before the enactment of the Tax Equity and Fiscal Responsibility Act (TEFRA) in 1982, few health maintenance organizations (HMO's) were significantly involved in the Medicare program. In 1981, Medicare enrollees accounted for less than 500,000 of the estimated 10 million Americans enrolled in HMO's; and among the 24 largest HMO's reporting any Medicare enrollees, 11 reported that Medicare accounted for less than 2 percent of total enrollment (Department of Health and Human Services, 1981). In the ensuing 5 years, much has changed; by March 1986, more than one-half million additional Medicare beneficiaries had enrolled in HMO's with TEFRA contracts (Ellwood, 1986).

Several papers have reviewed the subject of quality of care in HMO's (Cunningham and Williamson, 1980; Wyszewianski et al., 1982; Hornbrook and Berki, 1985; Hammons et al., 1986). The purpose of this article is to focus specifically on elderly Medicare patients and the implications for quality of care of their recent entry into capitated systems—organizations that have had relatively limited experience with the health problems of the frail elderly. It is our thesis that capitated systems may need to make specific organizational adjustments to provide high-quality care to the frail elderly.

A discussion of capitation under Medicare must first recognize the many possible variations on the capitation theme. Capitated plans vary in length of operation, size, ownership of facilities, and physician staffing and remuneration. Although most HMO's have had limited experience with capitated Medicare patients, some HMO's (e.g., the Group Health Cooperative of Puget Sound in Seattle) have had risk-sharing Medicare contracts for many years. Most HMO's offer the standard Medicare benefits, supplemented by expanded benefits such as coverage for drugs or eye services. A few capitated demonstration systems even include coverage for long-term care services. For example, the demonstration social HMO's include community-based and institutional long-term care benefits (Knickman and McCall, 1986). Although almost all capitated systems have intended to serve the elderly population in general, this need not always be the case. For example, On-Lok Senior Health Services in San Francisco is a capitated system that enrolls only the frail elderly who meet State eligibility criteria for skilled nursing care. In view of the diversity of capitated models, it is unfortunate that most studies on the quality of HMO care have been performed in the larger and more established HMO's. Whether the findings of these studies can be generalized to other capitated models is debatable.

Although many different formulations of the concept of quality of care have been proposed (Donabedian, 1980), in this article we use concepts advanced by Brook and Lohr (1985) and Donabedian et al. (1982). We will consider quality of care to be a reflection of how patient health status, achievable by a provider in a given setting, differs from that achievable under ideal circumstances. We include both beneficial and detrimental effects of care on physiological, physical, and mental patient function. By ideal circumstances, we mean a well-trained medical provider unconstrained by available medical technology or resources.

We use this definition because it is not enough to judge the performance of HMO's against the standards prevailing in fee-for-service practice. Many of the potential pitfalls we will discuss apply to quality of care in fee-for-service medicine as well. Given the inadequacies of the traditional health care system in the care of frail older persons (Eisdorfer, 1981), it is not unreasonable to hope that HMO's might be able to improve on quality of care.

Focus on the frail elderly

Older persons are a heterogeneous group. Most are relatively healthy and incur only moderate health expenditures. Only 5 percent of those 65-74 years of age are limited in physical activities (Feller, 1983), and mild cognitive impairment is present in at most 15

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percent of those over age 65 (Mortimer, Schuman, and French, 1981). Thus, it is not surprising that 60 percent of those over age 65 had annual health expenditures totaling less than $500 in 1980 (Kovar, 1984). The health care needs of the unimpaired elderly are likely to be relatively similar to those of the younger adults who have been the principal clients of HMO's.

HMO's, however, are expected to enroll Medicare beneficiaries that are representative of the older population overall. If this is the case, HMO's will necessarily include a significant and growing number of the frail elderly—individuals with multiple chronic medical problems or limitations in physical function. Among the rapidly growing segment of the population over 75 years of age, 16 percent are limited in at least one physical activity; for those over age 85, this number approaches 35 percent (Feller, 1983). Unlike their healthier counterparts, these frail individuals are likely to differ from the populations traditionally served by HMO's with respect to the quantity and types of health services needed. For example, they are more likely to need or benefit from long-term care services, interdisciplinary geriatric assessments, home health services, or homemaker services.

Elderly people who are unable to perform their usual activities have twice the annual health expenditures of those who are not limited (Kovar, 1984). Because of their higher use of health services and the difficulty in accurately setting a fair capitation rate (Thomas and Lichtenstein, 1986), an HMO may not be adequately reimbursed for their care; this puts these frail individuals at risk for possible underprovision of services in HMO settings. HMO's enrolling a disproportionate number of the frail elderly might lack the financial resources required to provide the specialized services needed.

On the other hand, the frail elderly would potentially benefit most from being in HMO's. The HMO offers protection from the financial hardship of illness (although not necessarily the financial hardship of long-term care). HMO's also have the potential of providing these individuals with more coordinated and comprehensive health services. Consequently, we focus the remainder of this article on the frail elderly, because the potential for improved or worse quality of care for older persons is magnified in this group.

Disadvantages of health maintenance organizations

Subgroups at high risk

Hornbrook and Berki (1985) have hypothesized that some patient subgroups are more likely than others to experience poor outcomes in HMO's. They have argued that the outcome of the "worried well" (i.e., patients with health concerns in the absence of physical illness) would not be adversely affected by the presumably conservative style of HMO medical practice, because the outcome in these patients would have been only marginally changed by extensive diagnostic work-up. Also, patients with established diagnoses for which efficacious therapy is available (a group we will call the "diagnosed sick") would presumably do equally well or better in HMO's, because the standards of care for these conditions are known to all physicians (HMO or fee for service).

People who are "subtly sick," however, are likely to have medical problems that require specialty referral or sometimes extensive laboratory or radiologic testing to adequately diagnose and treat. Hornbrook has suggested that these subtly sick individuals may have poor outcomes in the more conservative HMO practice environment where laboratory tests (Epstein et al., 1986) and referrals (Luke and Thomson, 1980) are probably less likely to occur.

The subtly sick descriptor, unfortunately, is applicable to the presentations of many illnesses in the frail elderly. One of the recurrent themes of geriatric medicine is that older patients may present with minimal or atypical symptoms (Rowe, 1985). Myocardial infarctions (heart attacks) may present without the classical symptoms of chest pain (Pathy, 1967), systemic infections may present without fever (Gleckman and Hibert, 1982), and hyperthyroidism may present without the usual symptoms seen in the nonelderly (Davis and Davis, 1974). When present, symptoms may be atypical; for example, a patient with pneumonia may present simply with anorexia or confusion or weakness. The diagnosis of these problems requires laboratory testing that might not be indicated in a younger patient with a similar clinical presentation. If the subtly sick are indeed at risk in HMO's, then the frail elderly are at risk of poor outcomes for this reason.

The frail elderly may also be less likely to fall into the "diagnosed sick" subgroup that presumably does well in HMO's. Establishing a definitive diagnosis is frequently more difficult in older patients; in fact, it has been suggested by some geriatricians that for some clinical problems less attention should be paid to obtaining a specific diagnosis and more to functional consequences of illness (Williams and Hadler. 1983). When multiple medical conditions converge to cause a given medical problem (such as urinary incontinence or lower back pain) in an older person, it may not be possible to disentangle the contributing etiologies to give the condition a specific diagnostic label. Diagnostic dilemmas of this type are more frequent among the frail elderly.

There is yet another subgroup of frail elderly patients to consider, "the noncomplaining sick." An estimated 17 percent of people over 70 years of age do not seek medical care even when they believe they should. This is either because of appointment difficulties, transportation problems, or a belief (possibly unjustified) that their symptoms are simply the result of old age (Branch and Nemeth, 1985). Although the literature on the subject is contradictory (Luft, 1981), complicated HMO appointment systems and the need to travel to centralized clinics or facilities may make access to care more of a problem for frail elderly patients disinclined to seek care.

Among the noncomplaining sick we should also include those who either may not seek care or may not clearly communicate their problems to a physician because of the presence of a major depressive disorder, with an estimated prevalence of 3.7 percent among those over age 65 (Blazer and Williams, 1980), or mild-to-moderate cognitive impairment, with an estimated prevalence as high as 15 percent among noninstitutionalized elderly (Mortimer, Schuman, and French, 1981). A physician may need to spend extra time taking a history from these patients, or need to obtain it from a family member, friend, or nurse. If a physician does not have enough time, problem recognition may be delayed and outcomes may worsen. Clearly this problem is not limited to HMO's. In fact, the amount of time available to evaluate a patient may be greater in HMO's to the extent that physician extenders are employed. However, the use of physician extenders in HMO's may be highly variable (Steinwachs et al., 1986), and a tightly scheduled HMO outpatient setting may not offer the flexibility necessary to spend more time with an older patient.

None of the problems of the subtly sick and the noncomplaining sick are limited to capitated medicine. Fee-for-service providers also must be educated about atypical presentation of disease, dementia, and depression in the elderly. Studies performed in fee-for-service settings have documented underrecognition of dementia (McCartney and Palmateer, 1985) and incontinence (Ribeiro and Smith, 1985). We discuss these issues as potential HMO problems, because we believe that the subtly sick and the noncomplaining sick may be at particular risk in HMO's.

Decreased hospital use

Experimental and nonexperimental investigations have shown that HMO's achieve their cost savings by reducing use of the hospital from 10 percent to 40 percent over comparable fee-for-service rates (Luft, 1978; Manning et al., 1984). Most of these studies have been done with nonelderly populations; however, limited evidence exists that similar reductions in hospital use may also be achievable with the Medicare population (Greenlick et al., 1983; Weil, 1976; Iglehart, 1985).

Decreased hospital use could have either beneficial or detrimental effects on patient outcomes. Because iatrogenic complications are frequent in hospitalized older individuals (Steel et al., 1981; Gillick et al., 1982), it is plausible that overall outcomes would improve by reducing hospitalization rates. On the other hand, there is evidence suggesting that decreased HMO surgical rates are a result of reductions in both necessary and unnecessary procedures (LoGerfo et al., 1979). To the extent that necessary procedures and hospitalizations are reduced in HMO's, one might expect negative effects on patient outcomes.

For the elderly, we believe that decreased hospital use may have one other potentially detrimental effect on quality of care. To reduce hospital use, HMO's may substitute ambulatory services and home health services (Hornbrook and Berki, 1985). Although these substitutions may be desirable for patients with adequate social support and resources at home, these benefits may not accrue to older individuals with minimal social support. Although 90 percent of men and 81 percent of women 55-64 years of age have somebody else at home, only 74 percent of men and 43 percent of women over 75 years of age have somebody else at home (U.S. Senate Special Committee on Aging, 1984). These figures probably overestimate the level of support available to those over age 75; for the older person fortunate enough to have someone at home, that person is likely to be a spouse who may not be able to manage an ill patient.

Consequently, HMO's may need to adopt criteria for hospital admission and discharge of the elderly that are different from those used for the nonelderly. An attempt to substitute outpatient services for hospital services may lead to noncompliance, increased complications, and decreased health for the elderly with little or no social support.

Advantages of health maintenance organizations

There are several reasons why HMO's might be better suited to provide care to the frail elderly. Many derive from the fact that HMO's are organized systems of care and, as such, should be better able to organize and coordinate the many services required by these individuals.

Quality of care

HMO's appear to provide care that is equal or better in quality to that provided in fee-for-service settings. National surveys, conducted by Harris, have shown that HMO enrollees are generally satisfied with the quality of their physicians, hospital care, access to care, and costs (Taylor and Kagay, 1986). Cunningham and Williamson (1980) reviewed 27 studies that compared the quality of care in HMO and fee-for-service systems; in 19 of the studies, they found that the HMO provided superior quality of care. With respect to chronic medical problems, two recent studies have shown that HMO's and fee-for-service practitioners achieve similar health outcomes for rheumatoid arthritis (Yelin et al., 1986) and colorectal cancer (Francis et al., 1984).

Unfortunately, problems of generalizability and internal validity limit extrapolation from these studies to the care of older persons. The Harris surveys interviewed individuals under the age of 65. Most of the comparative studies evaluated the care in large and well-established HMO's; they, too, focused on populations with few (if any) older enrollees. For example, 6 of the 27 studies reviewed by Cunningham and Williamson examined pediatric or obstetrical problems. Although two studies focused on older patients in HMO's (Shapiro et al., 1967; German et al., 1976), they focused primarily on access to care. Mortality was examined by Shapiro et al., but the process and other outcomes of care were not evaluated. The available studies have also been limited by the possible lack of comparability of HMO and fee-for-service populations in terms of demographic factors or initial health status. Thus, results may have been biased by selection in favor of either the HMO or fee-for-service system.

Although the Rand Health Insurance Experiment is also limited by problems of generalizability to the Medicare population, it provides information on health outcomes for comparable groups, in that families were randomly assigned to either HMO or fee-for-service practice. The results of this study indicate that health outcomes were relatively similar for the average individual assigned to HMO or fee-for-service care. However, low-income HMO patients with health problems had poorer health outcomes as measured by bed-days from illness, serious symptoms, and a risk-of-dying index (Ware et al., 1986). This would suggest that the frail elderly are at risk of poorer outcomes in HMO's, because nearly one-quarter of those over age 65 are below or just above the poverty line and there is a higher prevalence of chronic conditions in this age group (U.S. Senate Special Committee on Aging, 1984). The results of this study argue for careful monitoring of the health of the frail elderly in HMO's.

Continuity of care

Although continuity of care is usually considered within the larger subject of quality, it warrants separate consideration because of its perceived importance in the care of the frail elderly. It has been hypothesized that continuity might be associated with improved physician and patient relations, increased compliance and patient satisfaction, reduced hospitalizations and costs, and improved management of medical problems (Rogers and Curtis, 1980); however, the evidence linking continuity with these benefits is very limited (Dietrich and Marton, 1982), as is the evidence that HMO's improve continuity of care (Shortell et al., 1977).

Very few of the studies on this subject, however, have included elderly patients (in fact, most of the evidence comes from the care of children). Because the medical problems of the frail elderly are more numerous, complex, and of long duration, it is plausible that continuity would be of greater value in improving health for the frail elderly than for a well child. This is consistent with the findings of a recent study that showed that continuity of care led to fewer hospital days and improved patient satisfaction among veterans over the age of 55 (Wasson et al., 1984). Because HMO's are in a good position to implement policies to increase continuity, it is reasonable to expect that improved continuity may be an important benefit to Medicare HMO enrollees.

On a related issue, HMO's might be advantageous to the frail elderly in that they are suitable environments for the use of primary care as a gatekeeping mechanism. If this approach is used to maximize health as opposed to containing costs, the gatekeeper could act as a case manager tailoring a package of health services to the patient's medical, social, and emotional needs; the gatekeeper would be responsible for deciding on appropriate referrals and for coordinating the patient's care. Although such arrangements have the potential both for containing costs and improving quality of care, these benefits are theoretical and have never been demonstrated (Powe and Eisenberg, 1986). Thus, as with continuity, this remains only a potential benefit to Medicare HMO enrollees.

Geriatric assessment

There is mounting evidence on the value of specialized geriatric assessment, especially when coupled with a system for treatment (Rubenstein et al., 1982 and 1984). By geriatric assessment, we mean the comprehensive evaluation and management of the medical, psychiatric, and social problems of frail elderly patients in an interdisciplinary setting. Such evaluations, performed in specialized geriatric assessment units (GAU's), have been demonstrated to result in fewer acute hospital and nursing home days and improvement in survival and functional status (Rubenstein et al., 1984). However, relatively few GAU's have been established in the United States, presumably because of the high costs and uncertainty of fee-for-service reimbursement for such services. As a consequence, many of the prototype units have been located in medical centers within the Veterans' Administration, which may be described as a capitated system. (Currently, more than one-half of the 180 Veterans' Administration Medical Centers have GAU's.)

Reimbursement obstacles to the establishment of GAU's should not exist in HMO's. Indeed, their seeming cost effectiveness would act as an incentive for HMO's to establish such units. Here again, however, the potential advantage of a Medicare HMO may be elusive. Although geriatric evaluation reduces total institutional costs (including both hospital and nursing home costs), hospital costs may be increased (Rubenstein et al., 1984). The savings come from reduced nursing home days. Hence, if HMO's do not cover long-term care (as most do not), there may be little financial incentive to establish such assessment services.

Use of cost savings

As part of their arrangement with the Federal Government, participating TEFRA HMO's must use their cost savings (any difference between the capitation rate and their estimated costs) to either lower premiums or expand the benefits available to their beneficiaries. For example, some HMO's have used savings to expand coverage for visual and hearing aids, prescriptions, or dental care. Clearly, this benefits both healthy and frail older persons. Alternatively, however, the funds might also be used for programs to offset some of the potential HMO quality difficulties in treating the frail elderly. To improve the care of the subtly sick or noncomplaining sick elderly, HMO's might wish to emphasize continuing education in geriatrics or establish geriatric medicine consultation services. Extensive coverage of homemaker or nursing home services is not possible within the current TEFRA framework. Nevertheless, to counter some of the potentially negative effects of decreased hospital use, HMO's could expand the continuum of care available to their older enrollees by including limited homemaker or other long-term care services. Whether any of these measures can be successful deserves careful evaluation.

Independent review for quality

Given the many uncertainties previously outlined, should the quality of care rendered to Medicare beneficiaries in HMO's be independently monitored by peer review organizations? One could argue that such activities are not necessary, because some HMO's have their own quality assurance systems. Alternatively, it is said that HMO's should be subject to the same quality review process as fee-for-service physicians and hospitals.

However, the quality of care problems posed by capitation are quite different from those associated with prospective payment of fee-for-service hospitals, and the methods to detect them are not as well developed. For example, in a capitated system, there would be much less concern about patients being admitted to the hospital for services that could have been performed in an outpatient setting. With capitation, one would instead be concerned about the effect on the health of patients not being admitted to the hospital. Whereas the necessity of hospitalization could be judged from the hospital record in the former case, this would be much more difficult to do for a hospitalization that should have occurred but did not. For these reasons, quality review in HMO's would necessarily need to encompass office visits, ambulatory surgery and other outpatient services, home health services, and nursing home services. As Donabedian (1983) has indicated, the quality assessment process for HMO's would need to focus on entire episodes of illness rather than on hospital care, ambulatory care, or any other single component.

The inexperience of many HMO's with elderly patients and the potential quality problems previously enumerated lead us to the conclusion that some form of independent monitoring of quality in HMO's is justified. Such monitoring would also help allay (or maybe confirm) public suspicions regarding the quality of capitated care. It needs to be recognized, however, that an effective quality assessment program may bear little resemblance to the current activities of peer review organizations.

Conclusion

Many of the problems discussed in this article exist in both fee-for-service and capitated care, and a case could be made in favor of capitation even if it saved money alone without affecting quality of care. However, the argument in favor of capitation would be stronger if it saved money while simultaneously addressing some of the quality of care problems of traditional medicine for older persons.

Because of Medicare's late entry into the capitated area, little is known about the quality of care older individuals will receive in HMO's. Although studies indicate that the quality of care in HMO's is better or similar to that provided in fee-for-service settings, most of the studies have included few older individuals. Nevertheless, it is reasonable to expect that the relatively young and healthy among older persons will do as well in HMO's as the nonelderly. Whether the frail elderly will have better or worse outcomes in HMO's is less certain, and much of the success of Medicare capitation will depend on how the frail elderly fare in these systems. Thus, we anxiously await findings from the evaluation being funded by the Health Care Financing Administration on quality of care in HMO's involved in the Medicare Competition Demonstrations. But much more knowledge in this area is desperately needed so that if we write another article on the subject in 5 years, it could contain evidence and information as opposed to theory and speculation.

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Quality of care review: Recent experience in Arizona

by Donald F. Schaller, Albert W. Bostrom, Jr., and John Rafferty

The Arizona Health Care Cost Containment System (AHCCCS) is an HMO-oriented Medicaid demonstration project serving approximately 170,000 persons throughout the State of Arizona. To assure that its members are receiving high quality care and because of the potentially adverse incentives of capitation, AHCCCS places particular emphasis on quality-of-care review. A key component of that review is the development of annual, statewide medical audits. In this article, we describe the nature and organization of medical care delivery under AHCCCS, outline the evolution of the annual medical audits, describe the most recent of these audits, and present and discuss the results.

Introduction

The provision of medical care by health maintenance organizations (HMO's) creates cost-saving incentives that theoretically could have adverse effects on the quality of care. For this reason, quality-of-care review has taken on special significance in the HMO setting. Such review procedures have become a major activity of the Arizona Health Care Cost Containment System (AHCCCS), the Arizona HMO-oriented Medicaid demonstration project.

The nature and organization of medical care delivery in AHCCCS are described in this article, and the most recent of these AHCCCS reviews, the Year III Medical Audit, is discussed. During 1985, a total of 3,525 medical records were reviewed for the audit, using both implicit and explicit auditing techniques. Separate audit instruments were focused on general quality of care criteria, on the quantity and periodicity of early and periodic screening, diagnosis, and treatment services, and on the care provided with respect to two diagnosis-specific paradigms. In addition, physical facilities were evaluated at 85 individual provider sites. In this article, the audit design, methodologies, and corrective actions that were prompted by the findings are described; various problems that arose are discussed; and statistical results are presented.

Background

The Arizona Health Care Cost Containment System (AHCCCS) began operation October 1, 1982. It was, and still is, the Nation's first program to use prepaid health plans, such as health maintenance organizations (HMO's) and individual practice associations (IPA's), to provide health care to Medicaid-eligible people and to others on a statewide basis. AHCCCS is a Government and private-sector partnership that utilizes competitively bid, risk-sharing, prepaid, capitated contracts to provide services. Through statutory and regulatory guidelines, AHCCCS provides a framework within which private-sector contractors render services to eligible individuals.

AHCCCS was developed to provide quality, mainstream medical care to eligible persons; to contain costs; and to provide a stabilized annual base from which the State, county, and Federal governments can predict the amount of funding that will be required for services rendered. An indirect objective of AHCCCS is to serve as a prototype for States that want to convert their fee-for-service indigent health care programs to prepaid, capitated programs.

AHCCCS is a Medicaid demonstration project that differs from fee-for-service Medicaid programs because of its mandatory use of prepaid health plans and its exclusion of certain services, most notably long-term care. Although AHCCCS provides medical care to eligible people in long-term care settings, the room and board component remains the responsibility of the 15 counties in the State. The counties had been responsible for all indigent health care services from 1864 until AHCCCS was created.

AHCCCS serves primarily two groups of people: the categorically eligible, those recipients in the Aid to Families with Dependent Children (AFDC) program and in the Supplemental Security Income (SSI) program, and a State-defined medically needy-medically indigent (MN-MI) population. MN-MI applicants must meet income and asset criteria established by State law.

As of August 31, there were 120,934 categorical members and 48,746 MN-MI members.

Covered services are provided through health plans that are asked to bid on providing services on a per member, per month basis. Bids are submitted by county and by eligibility category (AFDC; SSI Disabled with Medicare; SSI Disabled without Medicare; SSI Aged and Blind with Medicare; SSI Aged and Blind without Medicare; MN-MI with Medicare, and MN-MI without Medicare).

Although the plans are paid a fixed capitation amount for each enrolled member, those payments are meant to cover the costs of providing covered services to all plan members within a given rate code category. Thus, although the cost of providing services to any one member may exceed the capitation payment, that loss would be recovered from capitation payments made on behalf of other members in the same rate code category.

Acceptance of capitation as payment for providing medical services to a group implies that a plan is at

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financial risk for the care of its members. That risk spawned an elaborate set of incentives to control costs and utilization.

There are five AHCCCS contracted health plans in each of the State's largest counties, Maricopa (Phoenix) and Pima (Tucson), and at least two in all of the remaining counties, except Yavapai where there is one.

When they are initially determined eligible, categorical members have the right to select a health plan, but MN-MI members are assigned to a plan on the basis of a mathematical formula. All members have the right to select a primary care physician within a plan, and once each year, in late summer, all members have a right to switch plans.

The use of primary care physicians (PCP's) is one of the mechanisms used to control utilization and costs. PCP's manage the patients' care and act as gatekeepers in that they must approve all specialty care and referrals.

Nominal copayments, which are waived if the member is unable to pay, are also used in the attempt to contain costs and overutilization.

In a traditional fee-for-service Medicaid system, there are inherent incentives for overbilling, billing for nonprovided services, and, on the recipient side, "doctor shopping" because of unlimited freedom to choose. Over the years, Medicaid has developed a number of procedures to monitor these abuses, such as Medicaid Management Information Systems and claims audits. Rarely is the quality of care an element of concern or investigation.

In a prepaid system such as AHCCCS, however, capitation eliminates the incentives for excessive utilization of health care services that are found in fee-for-service systems, but capitation may provide incentives for a plan to underprovide, to deny services, or to increase barriers to care, each of which may result in poor quality of care. Regulators must therefore develop an entirely new set of concerns, skills, and programs to maintain the integrity of the provider-patient encounter system. The heart of that program is a strong quality assurance program and a system of medical audits.

The phrase "quality of care" must be clearly defined in this context. An appropriate measure of the science of medicine and the art of care has not yet been precisely agreed upon by the patients, the professionals, or the payers. At AHCCCS, it is believed that the definition reflects a combination of accessibility, acceptability, continuity, comprehensiveness, documentation, reasonable cost, and an assessment of the therapy as measured against the outcome of care.

With traditional fee-for-service medicine, a concern for quality of medical care tended to be secondary to such matters as access to care and charges. Regulators and medical professionals believed the patient—with absolute freedom to choose medical providers—was the best arbiter of quality. But as physician fees and hospital charges rose, as managed systems mandated limitations on freedom of choice of providers, and as prior-authorization and utilization-management techniques were developed, traditional practices and procedures had to change.

The AHCCCS program uses several techniques believed to be effective in controlling medical care costs: Services are provided under capitation by prepaid health plans; plans are selected on the basis of competitive bidding; freedom of choice in the selection of providers by members is limited; the "gatekeeper" concept using primary care physicians is employed; and copayments are levied for some medical services.

As more States adopt similar programs, the issue of quality of care being provided under the AHCCCS demonstration project takes on broad, national implications. A number of States are presently considering, or already have begun to implement, changes in their Medicaid programs that incorporate one or more of the cost-containment elements now being tested in Arizona. Because such cost-containment measures may adversely affect the quality of care, the AHCCCS findings and experience in that respect will provide a valuable benchmark.

Systems for monitoring care

AHCCCS has developed multiple systems to monitor the utilization of care, access to care, and quality of care for its members. These systems include the following:

- Grievance and appeals processes at both the plan and State levels to assure timely and impartial resolution of all complaints whether by contractors, subcontractors, or members. Plan members are encouraged to resolve disputes with their physicians, and, if unsuccessful, to file a grievance with the plan. If the member is dissatisfied with the response or lack of response, the member has the right to file a grievance with the AHCCCS administration.
- Client advocacy at the State level to assure timely response to member concerns or questions that can be resolved without a formal grievance. AHCCCS client advocates work with members to resolve disputes informally and try to resolve issues expeditiously before they reach the formal grievance level.
- Encounter data processing, by both plan and provider, class grouped according to urban and rural settings, member category, and service type. Encounters are examined for averages per member, such as length of stay, ratios of prescriptions to visits, diagnostic tests per visit, and average length of hospital stay. By comparing these averages, norms are established, and the system is programmed to search for "lower limit exceptions." After lower limit exceptions are identified, claim detail is examined for each, and cases in need of further investigation are sent to quality assurance reviewers. Statistical calculation of lower limit exceptions on a per patient basis must be carefully evaluated because low utilization

by a particular patient is more often simply a lack of a need for care rather than a denial of care by a physician or a plan.

- Medical audits that systematically and objectively review the quality of medical services provided by the plans and their subcontractors to AHCCCS members.

Evolution of audits

The 1985 audit is the third quality assessment since the inception of AHCCCS. The first audit was done in late 1983, and the second was completed in October 1984. The scope and depth of these reviews have been in a process of evolution, and both the validity and usefulness of the results have been improving over time.

Year I audit

The first AHCCCS audit was carried out in 1983 under contract by the Accreditation Association for Ambulatory Health Care, Inc. (AAAHC), a nonprofit corporation based in Skokie, Ill. AAAHC members include the American College Health Association, American Group Practice Association, Free Standing Ambulatory Surgical Association, Medical Group Management Association, National Association of Community Health Centers, Inc., and the Outpatient Ophthalmic Surgery Society. AAAHC was created to continue the development and operation of a voluntary peer-based ambulatory acreditation program.

All of the 19 health plans under contract with AHCCCS in 1983 and a judgmentally selected sample of the individual providers in each plan were site visited by AAAHC teams and AHCCCS personnel and were subjected to peer review on the basis of AAAHC standards. These audits were based on the established AAAHC standards, which use implicit rather than explicit criteria, and no quantifiable conclusions or summary results were sought. The audit teams reported their general, subjective impressions of provider compliance with AAAHC standards, and they advised each plan of observed deficiencies, but there was no documentation that could be used for subsequent quantitative analysis or summarization.

Year II audit

The contract relationship with the private-sector firm that had been administering the AHCCCS program was ended during the second year of the program. A new State agency was created to administer the program, and it initiated audit preparations for the Year II audit. Physician-surveyor teams from the AAAHC were used again, but a number of significant improvements over the initial review were introduced in 1984. Each plan's quality assurance plan was reviewed by an AAAHC physician-surveyor, who met with the plan's medical director or designee; joint educational workshops were held to provide the contracting plans with consultation, education, and direct assistance in quality assurance procedures; and interviews and medical record reviews were conducted at 63 individual provider sites.

A major improvement in this audit was the prior preparation by AHCCCS and AAAHC staff of standardized forms for use in the medical record reviews. Consequently, the results of the medical record reviews were documented systematically and were accordingly available for subsequent analysis. Also, the sample size for the second audit was enlarged to cover a total of 1,223 records at 63 sites. Other improvements included the elimination of problems involving notification and lead time, which had hampered the first audit, and the provision of written instructions to all reviewers.

The results of the Year II audit were presented in the Annual Medical Audit Report from AHCCCS, and the audit design was discussed and the findings were summarized in a subsequent article by Bostrom and Rafferty (1985). For example, the auditors found satisfactory documentation of physical examinations on 65 percent of the charts, adequate histories on 70 percent, appropriate blood pressure documentation on 82 percent, and complete blood counts on 59 percent. Generally, the auditors reported that the providers of care in the AHCCCS program render care similar to that provided to their private, non-AHCCCS patients.

Shortcomings of second audit

In order to draw general conclusions about a given population on the basis of a sample drawn from that population, the sample should be demonstrably representative of the population. In particular, the size of the sample and the size of any subsets (strata) of the sample must be adequate. There are well-known statistical procedures for making such determinations, but they require the identification of specific parameters, along with information on the variability of those parameters, across the individuals in the population.

One problem that arises in designing such an audit, therefore, is the absence of any single, generally accepted parameter for measuring the quality of care. Although such characteristics of medical care as charges and manpower inputs are readily quantified, quality is a more complex and multifaceted phenomenon: It reflects a wide variety of characteristics of both the provider and the setting, and there is no single measure by which quality can be quantified and compared. Therefore, there was no single, key parameter to be estimated by the audit, and there were no data available on the variability of quality across the various AHCCCS providers. For these reasons, the findings from the Year II audit sample cannot be generalized to the entire AHCCCS population with any specified degree of precision.

Finally, some of the original data recorded by the AAAHC physician-surveyors at provider sites proved to be unusable by AHCCCS staff. The summaries of the record reviews for each plan were clear and legible, but there were inconsistencies in how the original tally sheets were completed by the various auditors. It was possible to produce estimates of the variability in quality across plans, but not across the individual providers within a plan. This placed limits on assessing the appropriateness of sample size for the first and second audits and on determining appropriate sample size for the audit for Year III.

Year III audit

Improvements

The Year III audit was an improvement over previous audits in a number of ways. AAAHC physician surveyors again provided peer-review assessment of the quality of care by auditing medical records, but the audits were more sharply focused than in prior years. The physician-surveyor teams again used established AAAHC quality assessment worksheets for reviewing patient records and evaluating each provider site, but they also completed worksheets based on two diagnosis-specific paradigms that had been prepared by the Office of the Medical Director, AHCCCS, and agreed upon by the AHCCCS Medical Directors Association. Such a focused approach is consistent with current developments in ambulatory care quality assessment, and it was specifically suggested by representatives of the Health Care Financing Administration in discussions following the Year II audit.

Second, AHCCCS staff members audited records to evaluate the frequency and timing of early and periodic screening, diagnosis, and treatment (EPSDT) services performed. This special emphasis was made because of Federal interest and concern, and because child-related issues have been given special priority by the Arizona State government.

Third, random sampling procedures were carefully observed, and sample size was given more explicit consideration than was possible during the preparation of the prior audits. Although standard deviations for specific, estimated parameters could not be obtained from second year data for this purpose, a rough estimation of the general range of the required sample size was made by constructing a proxy measure of the variability of quality across the 18 participating plans, and that was used to estimate the required sample size. The data collected during the Year III audit allowed after-the-fact determination of the precision level of individual parameters at the 95-percent level of confidence for the sample size employed.

During April through July 1985, AHCCCS carried out the third medical audit. It was again conducted by AHCCCS staff and physician-surveyors from AAAHC, and a total of 3,525 randomly selected patient medical records were reviewed at 85 randomly selected provider sites around the State.

In addition, this audit produced empirical data on quality of care that is potentially usable for comparisons with other Medicaid systems. Extensive quantitative results were established in the audit report (Schaller and Bostrom, 1985), and wider distribution was attained by summarizing the findings in an article published in the medical literature (Bostrom and Rafferty, 1985). These findings, therefore, may be used as benchmarks by other systems.

Audit components

The audit consisted of the following six distinct components.

- AAAHC checklist. The physician-surveyors used an eight-element worksheet to review 1,836 randomly selected medical records at 85 randomly selected provider sites with respect to established criteria of medical care quality as outlined in the AAAHC Accreditation Handbook (1985). The worksheet was used to determine whether the following items had been properly documented: legibility to the auditor; the presence of an adequate history and physical exam; recorded allergies; appropriate patient diagnostic summary and problem list; appropriate use of consultants; diagnostic workup; and treatment plan consistent with the recorded diagnoses. These were reviewed as an indication of a good primary care patient-physician relationship.
- Provider site evaluations. AHCCCS staff members completed an 11-element worksheet to evaluate the physical facilities and environment at each of 85 randomly selected primary-care-physician sites at which medical records were reviewed. Elements evaluated included provider accommodations, the patient appointment system, and the appropriate handling of office medications (such as narcotics and outdated and refrigerated pharmaceuticals), and emergency medications and equipment.
- EPSDT component. AHCCCS staff members reviewed a sample of 1,689 randomly selected medical records for patients under 21 years of age at 83 provider sites, using a 23-element worksheet to document the frequency and timing of EPSDT services with respect to the recommended EPSDT periodicity schedule.
- Low back pain paradigm. Physician-surveyors reviewed 239 patient records at 75 provider sites for the care of low back pain, using a seven-element worksheet based on medical criteria developed by the Office of the Medical Director, AHCCCS, and approved by the AHCCCS Medical Directors Association. The sample was drawn randomly from computerized encounter data that showed the patients of each physician who have recorded a problem of low back pain.
- Hypertension paradigm. Physician-surveyors reviewed 436 randomly selected medical records at 83 provider sites for the care of hypertension, using

a 25-element worksheet based on medical criteria developed by the Office of the Medical Director, AHCCCS, and approved by the AHCCCS Medical Directors Association.

- Standards review. At each provider site, physician-surveyors provided by the AAAHC applied the customary standards used by that accrediting body and reviewed professional credentials, medical recordkeeping practices, observance of patient rights, quality-of-care related characteristics, and the physical condition of the facilities in which the physician practiced. These AAAHC evaluations were presented in a separate AAAHC report.

Results of year III audit

Qualifications

A number of characteristics must be kept in mind when interpreting audit findings.

First, each audit instrument was made up of a series of elements, or questions, and the overall score for a given plan on a given audit component was computed by giving each element equal weight in that score. In computing a plan's score on the AAAHC checklist, for example, the same weight was given for presence of a treatment plan in the record (TRT) as for adequacy of the diagnosis or assessment (DIA). No attempt was made to weight the elements differentially on the basis of possible differences in their relative importance.

Second, audit results were based on a review of medical records, and the data specifically reflect the presence or absence of documentation in those patient records. For example, the recording of a "No" for any documentation of therapy (DOC) on the low back pain audit instrument would mean the auditor found no therapy documented in the record, whether or not any therapy was actually provided to the patient.

Third, it is important to note that there is presently no basis for comparing any of these AHCCCS results with the performance of non-AHCCCS physicians. Thus, scores are used for making interplan and intraplan comparisons within the AHCCCS system and for identifying areas in need of improvement at both the plan and statewide levels. There are presently no means for determining how the scores would compare with scores that might be received on the same criteria by non-AHCCCS providers, either within the State of Arizona or in the Nation at large. It is the relative scores, therefore, that are the most meaningful and useful at this time. The absolute score levels, whether they appear to be high or low, cannot really be interpreted in a meaningful way.

Results for the AAAHC checklist

Plan and statewide scores on each element of the AAAHC audit instrument are given in Table 1. The AHCCCS plan names and their abbreviations are listed in Table 2.

Interpretation

The first two columns of Table 1 identify the plan and indicate the number of patient records audited by AAAHC physician-surveyors at that plan's provider sites.

The next eight columns give the scores of each audit element for each health plan. Each element score is the percent of patient records audited for that plan on which the auditors gave a positive (good quality) response. A plan's score of 83 on LEG, for example, means that the auditors found 83 percent of the records audited for that plan to be acceptably legible.

The next-to-last column indicates the plan's overall score on all eight elements for all records that were audited. An overall score of 55, for example, means that 55 percent of the responses to all the audit elements for that plan were positive (good quality) responses.

The last column gives the confidence intervals (precision level) of the overall score at the 95-percent level of confidence, rounded to the nearest whole number. For example, a precision level of + or − 5 associated with a plan's overall score of 83 means that, given the number of records audited for that plan, there is a 95-percent probability that its true overall score lies between 78 and 88 percent. The precision (+ or −) levels were calculated using the squared differences between plan scores and scores on individual patient records, and, thus, reflect variability in scores from one patient record to another.

The total line gives the results of the statewide level, based on all records audited using the AAAHC checklist. Interpretation is analogous to that for the plan results.

Summary

Overall scores for the prepaid health plans on the AAAHC checklist varied from 38 to 92. Precision ranges were relatively narrow in most cases, indicating an adequate sample size for both plan-level results and statewide results at the 95-percent level of confidence.

Relatively high scores were recorded at the statewide level on legibility of records (LEG, 95 percent), presence of a treatment plan (TRT, 87 percent), and appropriateness of diagnosis or assessment (DIA, 84 percent). Relatively low statewide scores were recorded on presence of diagnostic summary or problem list (DSU, 52 percent) and appropriate use of diagnostic summary or problem list (USE, 36 percent).

Illegible records had a particularly severe impact on scores received on this audit component: If a "no" was received on LEG (for legibility of the record to clinical personnel), no credit was given on any of the other audit elements, resulting in a score of zero on that particular patient record.

Table 1

Statewide scores on each element of the AAAHC audit instrument, by prepaid health plan

Health plan	Number of records	Audit element								Overall score	Precision level + or −
		LEG	HIS	DIA	TRT	CON	DSU	USE	ALL		
					Score						
Total	1,836	95	70	84	87	73	52	36	72	71	1
APCI	174	83	50	60	75	57	32	20	64	55	5
APIPA	672	97	69	84	83	65	30	19	70	65	2
CAP	45	100	87	93	98	62	7	4	89	68	4
DHP	48	100	63	90	98	77	67	0	98	74	4
DYNAMIC	45	62	11	47	49	18	53	9	53	38	10
EL RIO	75	99	99	97	97	97	81	21	83	84	3
FHP NE	46	100	78	91	100	93	30	28	91	77	5
GMS	45	91	76	62	84	31	80	16	58	62	7
MCHP	273	97	88	96	94	93	97	88	81	92	2
SJM	44	100	95	100	100	95	64	55	70	85	4
NAFHP	45	100	71	69	98	98	31	11	67	68	5
PxHP	46	98	76	91	91	91	65	43	46	75	7
PINAL	44	93	61	89	89	61	89	50	73	76	8
PIMA	119	96	59	80	92	90	69	59	61	76	4
SHS	46	96	50	96	96	24	0	0	63	53	5
UFC	69	100	70	91	96	99	100	97	84	92	3

NOTES: AAAHC is Accreditation Association for Ambulatory Health Care, Inc. Complete titles of prepaid health plans are given in Table 2. Audit elements used in boxheads are defined as follows:
LEG is record legible to clinical personnel.
HIS is history and physical adequate.
DIA is diagnosis and assessment adequate.
TRT is treatment plan present.
CON is consultation and referral adequate.
DSU is diagnosis summary or problem list present.
USE is diagnosis summary or problem list used appropriately.
ALL is allergies recorded.

Table 2

Abbreviations used for AHCCCS prepaid health plans

Abbreviations	Health plan
APCI	ACCESS Patient's Choice
APIPA	Arizona Physicians IPA
CAP	Comprehensive ACCESS
DHP	Doctors Health Plan
DYNAMIC	Dynamic Health Services
EL RIO	El Rio Santa Cruz
FHP NE	Family Health Plan of NE. Arizona
GMS	Gila Medical Services
MCHP	Maricopa Health Plan
NAFHP	Northern Arizona Family Health Plan
PxHP	Phoenix Health Plan
PIMA	Pima Health Plan
PINAL	Pinal General
SHS	SHS Medical Care Systems
SJM	Mercy Care Plan
UFC	University Famli-Care Plan

NOTE: AHCCCS is Arizona Health Care Cost Containment System.

Results for provider-site evaluations

Plan and statewide scores on each element of the provider-site evaluations are given in Table 3. Note that, for this audit component, the unit of observation is the provider site rather than the individual patient record.

Interpretation

The first two columns of Table 3 indicate the plan and the number of provider sites that were audited for each.

The next 11 columns give the plan scores for each audit element. Each element score is the percent of audited provider sites for which auditors gave a positive (good quality) response on that element. A score of 100 for SUR for a given plan, for example, means that surroundings were orderly and professional at 100 percent of the provider sites audited for that plan.

The next-to-last column gives the plan's overall score on the 11 elements. An overall score of 64, for example, means that 64 percent of the individual audit responses were positive (good quality) responses.

The last column reports the precision level of the overall score at the 95-percent level of confidence, rounded to the nearest whole number. A precision level of + or − 8 in conjunction with an overall score of 77, for example, means that there is a 95-percent probability that the plan's true score lies between 69 and 85 percent.

The total line gives the results on a statewide basis.

Summary

Overall scores for the plans on the provider-site evaluations component varied from 70 to 100. For most of the plans, the precision ranges were relatively narrow at the 95-percent level of confidence.

On a statewide basis, relatively high scores were recorded for storage of temperature-sensitive drugs (PHA, 99 percent), availability of appointments (APP, 96 percent), storage of light-sensitive drugs (SEN, 96 percent), orderly and professional surroundings (SUR, 95 percent), and examination room privacy (EXA, 91 percent). Relatively low scores were recorded for existence of an office policy on broken appointments (OFF, 49 percent) and routine waiting time (ROU, 65 percent).

Fire-safety code compliance

As a separate subcomponent of the provider-site evaluations, AHCCCS arranged to have the State Fire Marshal's Office review provider sites for fire safety code compliance. Accordingly, 78 provider sites throughout the State were visited by inspectors from that office; 33 sites were found to have no violations, and one or more violations were found at the remaining 45. Violations included a lack of emergency exits and exit signs, improper storage of flammable materials, lack of fire extinguishers, and structural defects in some physician offices, such as narrow hallways. Correction of such violations was required within 90 days.

Results for the EPSDT component

The statewide EPSDT results are given in Figure 1. The bars indicate the compliance ratios for each of the audit elements, where the ratios are expressed as percents.

Table 3

Statewide scores on each element of the provider-site evaluations, by prepaid health plan

Health plan	Number of sites	Audit element											Overall score	Precision level + or −
		SUR	EXA	APP	ROU	OFF	NAR	CUR	SEN	PHA	EME	OXY		
							Score							
Total	85	95	91	96	65	49	71	79	96	99	71	85	81	3
APCI	12	100	92	100	50	58	58	58	100	100	58	75	77	8
APIPA	40	93	83	95	60	45	70	78	93	98	68	85	79	5
CAP	3	100	100	100	33	33	67	67	100	100	100	100	82	8
DHP	2	100	100	100	0	100	100	50	100	100	100	100	86	6
DYNAMIC	1	0	100	100	0	0	100	100	100	100	100	100	73	0
EL RIO	1	100	100	100	100	100	100	100	100	100	100	100	100	0
FHP NE	3	100	100	100	100	33	67	100	100	100	33	67	82	8
GMS	1	100	100	100	100	0	0	0	100	100	100	100	73	0
MCHP	7	100	100	86	86	86	100	100	100	100	100	100	96	5
SJM	3	100	100	100	100	0	100	67	100	100	67	67	82	14
NAFHP	3	100	100	100	100	100	0	100	100	100	67	100	88	5
PxHP	3	100	100	100	100	0	33	100	100	100	0	33	70	10
PINAL	2	100	100	100	50	0	100	100	100	100	100	100	86	6
PIMA	1	100	100	100	100	100	100	100	100	100	100	100	100	0
SHS	1	100	100	100	0	0	100	100	100	100	100	100	82	0
UFC	2	100	100	100	100	100	100	100	100	100	100	100	100	0

NOTES: Complete titles of prepaid health plans are given in Table 2. Audit elements used in boxheads are as follows:
SUR is surroundings orderly and professional.
EXA is exam rooms private.
APP is a appointments available within 2 weeks.
ROU is routine wait 45 minutes or less.
OFF is office policy on broken appointments.
NAR is narcotics locked and counted weekly.
CUR is drugs current.
SEN is light-sensitive drugs stored properly.
PHA is temperature-sensitive drugs refrigerated.
EME is emergency cart available.
OXY is oxygen available.

Interpretation

The compliance ratios are calculated on the basis of the recommended EPSDT periodicity schedule. The periodicity schedule, which was developed by a committee of medical, dental, and health professionals in cooperation with AHCCCS staff utilizing Federal guidelines, indicates the specific EPSDT services to be provided to patients under 21 years of age at specified intervals according to patient age.

The compliance ratio on any given audit element is the quotient of the number of times the service was actually provided divided by the recommended number of times. (The recommended number is derived from the periodicity schedule in conjunction with the age of each patient on the date of the audit and the date of the patient's first visit to the provider.) The quotient is expressed as a percent rounded to the nearest whole number.

Thus, for example, a compliance ratio of 53 on initial history would indicate that the providers who were audited had documented 53 percent of the initial histories that would be recommended on the basis of the patients' ages and first-visit dates.

EPSDT periodicity recommendations were new to Arizona, and the procedures for selecting patient records and for extracting EPSDT data from those records had not been tried previously. Accordingly, the EPSDT component of the audit was viewed as exploratory, and interplan comparisons were not made. However, the results are still useful at the statewide level because they draw attention to specific EPSDT service categories needing improvement, and they suggest service categories to be emphasized in designing future audits.

Summary

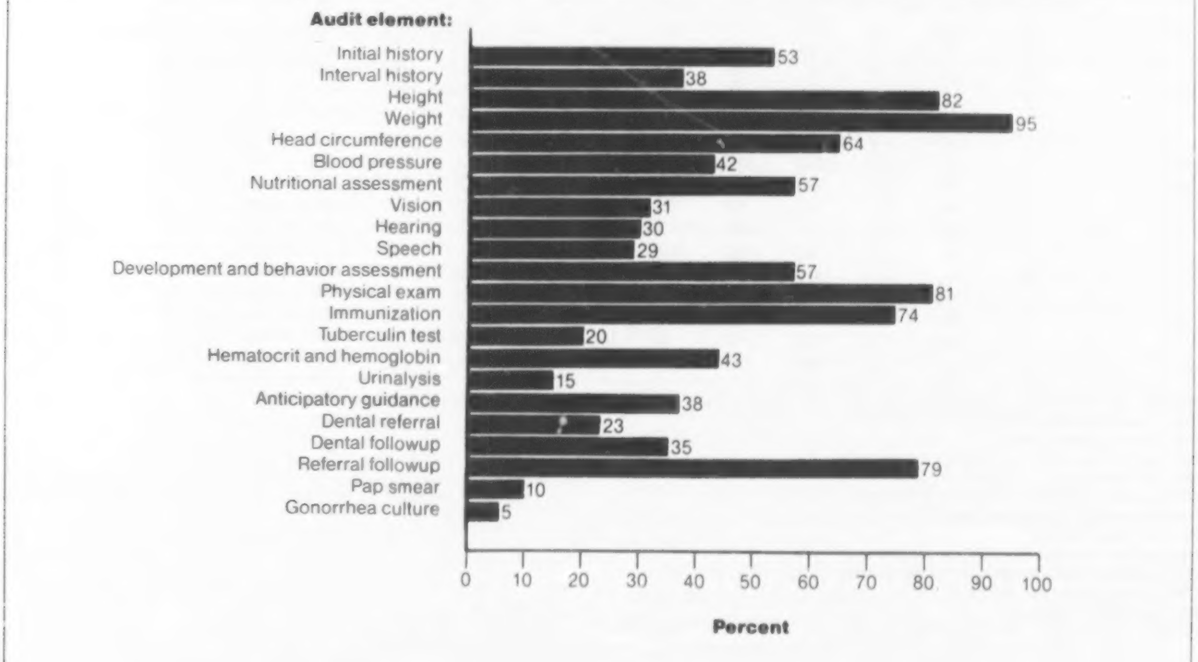
The statewide element scores on the EPSDT audit ranged from 5 to 95 percent. A total of 1,689 medical records were reviewed by AHCCCS staff at 83 provider sites for EPSDT services. The statewide overall compliance ratio was 58 percent, with a precision level of + or − 2 percentage points at the 95-percent level of confidence.

Results: Low back pain paradigm

The low back pain paradigm worksheet contains seven elements. The first three elements pertain to history and are recorded as a single element, so that only five element scores are reported. Each element pertains to the presence or absence of documentation

Figure 1

Statewide compliance scores on each element of the EPSDT audit, by audit element



NOTE: EPSDT is early and periodic screening, diagnosis, and treatment services.

in the record that the service was provided. The elements are as follows:

- History. Documentation of presence or absence of two of the following: trauma, pain radiation to lower extremities, bladder or bowel dysfunction.
- Exam. Examination of back for local tenderness, mobility, muscle spasms.
- Sensory motor exam. Sensory motor exam in lower extremities.
- Lumbar. Lumbar-sacral X-ray films if neurologic deficit.
- Documentation. Any documentation of therapy.

The use of this paradigm in the Year III audit was viewed as exploratory, because AHCCCS had no prior experience in drawing a sample of patient records for specific diagnoses from a predetermined sample of providers. Consequently, the sample of records was not large enough to justify interplan comparisons, though it was adequate for identifying apparent strengths and weaknesses of care on a statewide basis.

The element scores on the low back pain paradigm ranged from a low of 41 to a high of 89. The lower scores were for history (41 percent), lumbar-sacral X-ray where indicated (49 percent), and sensory motor exam (54 percent). Scores of 81 and 89 were recorded for general examination of back and documentation of therapy.

A total of 239 medical records were reviewed at 75 provider sites with respect to low back pain. The overall statewide score was 63, with a precision level of + or − 4 percentage points.

Results: Hypertension paradigm

The hypertension paradigm worksheet contains 25 elements. Elements 4 through 14 pertain to history, and they are recorded as a single element so that only 12 element scores are reported. Each element pertains to the presence or absence of documentation in the record that the specific service was provided. The elements are as follows:

- History. Documentation for the assessment of end-organ damage—indication of any one of the following: chest pain, hematuria, tinnitus, dyspnea, flank pain, syncope, palpitations, muscle weakness, any visual disturbance, edema, headache.
- Blood pressure (both arms).
- Pulse.
- Weight (current).
- Height.
- Cardiovascular exam.
- Funduscopic exam.
- Electrolytes.
- Blood urea nitrogen.
- Creatine.
- Urinalysis.
- Any documentation of therapy.

As with the low back pain paradign, the hypertension paradigm was viewed as exploratory in this Year III audit. In all, 436 patient records were reviewed; this was not a large enough sample to justify interplan comparisons, but was adequate for the statewide analysis.

The element scores on the hypertension paradigm ranged from 24 to 92 percent. The lower scores were for measurement of patient height (24 percent), funduscopic exam (32 percent), blood pressure, both arms (43 percent), and documentation of assessment of end-organ damage (49 percent). At the high end, scores of 89 percent and 92 percent were recorded for measurement of patient weight and documentation of therapy, respectively. The remaining six elements had scores ranging from 58 percent to 74 percent.

A total of 436 records were reviewed at 83 provider sites with regard to hypertension. The overall statewide score was 61, for which the precision was + or − 2 percentage points at the 95-percent level of confidence.

Post-audit activities

Analysis

The results of the Year III audit are being used as a basis for further improving the quality of care that is provided to AHCCCS members.

For example, the audit findings suggest a possible association between audit scores and such factors as whether the plan is hospital based or whether it uses an IPA or a staff-model type of organizational structure. Staff-model plans accounted for the four highest scores on the AAAHC checklist, and the five hospital-based plans received higher scores than most of the nonhospital-based plans.

A number of other plan characteristics also merit further study; for example, AHCCCS is interested in the degree to which audit scores are associated with plan size, changes in plan enrollment, the amount of voluntary disenrollment during open enrollment periods, and rural versus urban location. Accordingly, further analysis of the audit data, using more sophisticated statistical techniques, including multiple regression, are being pursued.

Quality assurance and followup

All prepaid health plans under contract to AHCCCS are required to have formal, written quality assurance programs in place. Each plan's medical director or a physician designee must participate actively in all phases of the review system, and a multidisciplinary quality assurance committee must meet at least quarterly and must maintain minutes of those meetings with regard to the identification, evaluation, and resolution of actual and potential quality-of-care problems. Additional AHCCCS requirements pertain to methodologies for identifying problems for review; establishment of quality standards; documentation of activities and relevant communications; objective measurement techniques; and provisions for feedback to the plan medical director, plan administrator, and the AHCCCS Administration.

In addition to these more broadly based procedures for enhancing the quality of care, AHCCCS uses the results of the annual medical audits as a basis for specific corrective actions where such actions appear to be warranted. Each plan has received a narrative report from AAAHC indicating findings with respect to AAAHC standards, and each has also received a detailed report from AHCCCS on the results of the five quantitative components of the audit. Each plan has been required to submit to the AHCCCS medical director's office a corrective action plan detailing actions to correct deficiencies noted by the reviewers. The medical director must approve each corrective action plan, and the office conducts random, unannounced followup site visits to confirm that the corrective actions are being implemented.

Development of year IV audit

Evolution of the medical audit processes and methodologies occurs on a yearly basis. The ultimate goal is the objective measurement of the quality of medical care provided to AHCCCS members, utilizing criteria that can be extrapolated to the total universe rather than to a specific population.

This evolutionary process has resulted in a number of changes in the Year IV audit. Reassessment of the audit tools led to the development of a generic quality assessment worksheet that could be utilized with any physician-surveyor team.

The diagnosis-specific paradigms, with input and consensus from the AHCCCS Medical Director's Association, have been expanded to include information on whether the treatment improved or controlled the course of the disease or condition; in short, it is an evaluation of the outcome of care.

EPSDT services will be reviewed for completeness of the appropriate age-specific screenings performed by a selected group of primary care physicians. A second phase scheduled for the Year IV audit will develop an evaluation methodology to measure the success of the prepaid health plans' outreach efforts.

Finally, sample size selection for Year IV has been based on the Year III results. A maximum of 106 primary care physicians representing 15 plans will be reviewed statewide. Onsite medical record reviews began in April and will be completed by August 29, 1986. The summary report will be published in the fall of 1986.

Conclusion

The AHCCCS medical audits represent the first statewide attempt in Arizona to accomplish a statistically valid evaluation of primary care physicians in an outpatient setting. Medical records, facilities, and elements of the patient-physician relationship have been evaluated; they will be subject to continuing evaluation, and the results are being used to correct deficiencies in the quality of care wherever they may be found. However, these audits are merely a beginning in a rapidly expanding quality assurance process. At this stage, the data are proving to be more a fertile source of questions, than a source of answers, about quality of care, and much remains to be done.

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Symposium

Data in a capitated environment

Introduction

by James Lubitz and Marian Gornick

Data about the utilization of health care services have been used in the public sector to serve a number of important purposes. One major purpose has been to gain an understanding of the patterns of health care use. By analyzing utilization of services in relation to sociodemographic variables such as age, sex, race or ethnicity, income level, and insurance coverage, knowledge can be gained about the factors that influence access to health care services. By analyzing morbidity, mortality, and hospital readmissions in relation to the provision of services, information can be developed about the quality of care delivered. When data on utilization and payments are analyzed by certain variables such as type of provider, insight can be gained about the appropriateness of those payments and the effectiveness of different health care delivery systems.

The Health Care Financing Administration (HCFA) has been able to analyze the patterns of health care use by Medicare beneficiaries from the records of bills submitted for payment. These data, augmented by data collected in national surveys and special research and demonstration projects, have influenced the formulation of many policy initiatives for the Medicare program.[1] A major influence on the development of the Medicare hospital prospective payment system, for example, was the knowledge gained about the experience of the Medicare program through data based on claims for payment. Claims data are now being used to evaluate certain aspects of the impact of the new system. In contrast to the extensive data on fee-for-service use, information available to HCFA on the use of services in capitated delivery systems is confined to a few aggregate statistics.

The role of health maintenance organizations (HMO's) in the delivery of services to Medicare beneficiaries has grown with the passage of the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982 and is expected to increase substantially in the future. To gain an understanding of the use of data in private-sector capitated delivery systems, and the lessons to be learned from their experience to date, the Office of Research and Demonstrations invited six organizations to take part in a written symposium focusing on five broad questions relating to HMO data systems:

- The major purpose of their data systems.
- The basic features of their files.
- How their data systems are being used today.
- Personnel and costs needed to operate their systems.
- The kinds of data requests made by employer groups.

These organizations were invited to provide information because of their interest and activities in HMO data systems and data issues. The full set of questions is shown preceding the responses of the participants.

The symposium brings together three kinds of viewpoints on these HMO data issues. First, executives from three HMO's respond to questions about their internal data systems. The contributors are Bernard Neeck, Senior Vice President and Chief Financial Officer, and Daniel Kennedy, Vice President and Underwriter, of the Health Insurance Plan of Greater New York, a large nonprofit network model; Joseph LaAsmar, President, and Mary Tierney, Associate Medical Director, of the Chesapeake Health Plan, a for-profit network and independent practice association (IPA) model in Maryland; and Gino Nalli, President, of M.D. IPA, a for-profit IPA model in the Greater Washington-Baltimore area.

A second viewpoint is provided by Gail Warden, Chief Executive Officer, and Michael Wagner, Director, Data Management Center, of the Group Health Cooperative of Puget Sound in Seattle; and by Mark Hornbrook, Senior Investigator, Merwyn Greenlick, Director, and Marjorie Bennett, Research Associate, of the Center for Health Research, Kaiser Permanente in Portland, Oregon. These authors discuss data not so much from the perspective of the systems in place in their own HMO's but from the perspective of the general information requirements of HMO's (Warden and Wagner) or from the point of view of what the Medicare program might need (Hornbrook, Greenlick, and Bennett).

A third point of view is provided by Laird Miller, from Honeywell Inc. in Minneapolis, who is his company's Corporate Director of Health Systems and its representative on the Washington Business Group on Health, the Midwest Business Group on Health, and the Minnesota Coalition on Health Care Costs. He discusses the kinds of information that purchasers of care need to make sound choices among plans as well as the recent change in scope and focus of Honeywell's data collection activities.

Several broad themes and issues emerge from the articles in this symposium. The first theme is the need for data in the increasingly competitive environment in which HMO's find themselves today, an

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[1] See Lave, J. R., Dobson, A., and Walton, C.: The potential use of Health Care Financing Administration data sets for health care services research. *Health Care Financing Review*. Vol. 5, No. 1. HCFA Pub. No. 03154. Office of Research and Demonstrations, Health Care Financing Administration. Washington. U.S. Government Printing Office, Fall 1983.

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environment in which superior management is becoming a requirement for success. Competition may come from other HMO's, some affiliated with large for-profit or not-for-profit chains, as well as from preferred provider organizations, other modified fee-for-service plans, and traditional fee-for-service plans.

In this highly competitive environment, a primary purpose of current data systems in HMO's is utilization control. HMO's are interested in monitoring how their physicians and enrollees use services, such as referrals to specialists, inpatient care, laboratory tests, and prescriptions. They have instituted reporting systems to track the use of these services.

Nearly all of the respondents note the importance of developing their data reports by the demographic characteristics of their enrollees, such as age and sex. Some have also pointed out that it is necessary to link the diagnosis of the patients to the utilization of physician services by specialty in order to effectively monitor the use of services. These data are used by HMO managers for resource control, for planning, for providing physicians with objective data on their practice styles, and for peer comparison.

A second major theme—mentioned by Miller; Warden and Wagner; and Hornbrook, Greenlick, and Bennett—is the desirability of data on health status and health risk of covered populations and on outcomes of care related to patient risk. Risk factors would include smoking, weight, cholesterol level, and blood pressure. HMO's would use such data to manage resources to produce the best possible outcomes. Purchasers of care would use these data to evaluate the performance of providers and health plans serving their employees. In addition, Miller points out the need for employers themselves to collect data on environmental and occupational risk factors for a number of reasons, including tracking the experience from risk exposure to medical care events and costs.

Another important theme is the need for gathering data periodically on consumer satisfaction. Such data are generally collected by means of surveys. Information important to HMO's includes waiting time for appointments, complaint patterns, and reasons for disenrolling. As noted by Warden and Wagner: "Long-term measures of health status will be meaningless unless the HMO administrator can maintain a reasonably stable enrollment base."

An interesting fact brought out in this symposium is the low costs of operating the management information systems at the Health Insurance Plan of Greater New York (HIP), Chesapeake Health Plan, and M.D. IPA. The figure cited for HIP is $0.46 per member per month; for Chesapeake Health Plan, $0.48; and for M.D. IPA, $0.22. Recent site visits were made to the latter two plans. Demonstrations of their systems indicated impressive ability for rapid retrieval of longitudinal data on enrollee encounters.

Finally, Miller raises two issues that are important from the standpoint of the employer. One issue is the change in management strategy relating to health. At first, Honeywell worked to collect utilization data primarily to contain health care costs. However, their emphasis has recently shifted from "managing health care costs to managing health." Their belief now is that, to manage costs, the employer needs to work to "prevent problems from occurring through early identification and evaluation of personal risks, workplace hazards, and environmental and community health problems." Miller notes that, to achieve this purpose, health plans require sophisticated information systems for collecting data that allow comparisons across plans and providers.

The second major issue raised by Miller relates to the difficulty Honeywell experienced in obtaining data from the fee-for-service insurance carriers that cover 75 percent of their employees and from the HMO's and preferred provider organizations that enroll the remaining 25 percent. With regard to HMO's, Miller notes that some could not "identify by employer group patients who receive care." In contrast to Honeywell's experience, unique patient identifiers are a basic part of the Chesapeake Health Plan and M.D. IPA data systems, and HIP is planning to incorporate patient identifiers into their encounter system.

We believe that these articles provide valuable insight into the importance and the role of data in the changing health care scene. If future changes in HMO data systems are in keeping with the issues raised in these articles, we anticipate the following developments:

- Increasing sophistication in the systems used by HMO's for utilization control and management.
- Increasing demands by purchasers of care for data to judge the appropriateness of premiums, quality of care, and health outcomes.
- Integration of clinical measures into utilization and enrollment data to develop data bases that allow HMO's to manage resources for production of optimal outcomes and to provide purchasers with evidence of good performance.
- Pressure from purchasers of care for common measures to allow performance comparisons across health plans.
- Attempts to develop population-based measures of health risk for employee groups and HMO enrollees.

Developments will depend on the nature of the requests from employers for performance data, on technical advances in measuring health risk and outcomes, and also on any decisions that may be made regarding data about Medicare and Medicaid enrollees in HMO's.

Questions for HMO administrators on their data systems

1. What were the major purposes and objectives as you considered a system for maintaining data on enrollment and utilization of services? What kinds of questions and management concerns was the system designed to address?

2. Please describe the basic features of the enrollment and utilization data systems, including an overview of the types of files maintained. Did your HMO design the enrollment and utilization data system, or did you use the services of a consulting firm? We are interested in both the hardware and systems design. For example, do you have a computerized file of physician visits? What are the major data elements in that file? Can the data be linked for a particular enrollee or physician? Do you have a similar file for hospital admissions and referrals? How might you change the system in the future?

3. How are the systems used now? How important are they to your HMO? Do you generate periodic reports? What variables are of greatest importance in these reports? For example, do you analyze visits per person and/or visits per 1,000 enrollees? What levels of aggregation are used? Are data aggregated by provider and/or by market area? For what issues might you do special analyses? Do you have any examples of how data analyses led to changes in the way you manage your HMO? Is the system used on line also?

4. Relating to personnel needed to maintain the systems and systems' costs: Could you tell us about the number of staff needed to update and maintain the information systems? Could you estimate the cost of operating your system on a per enrollee basis?

5. Employers, both singly and in health care coalitions, are increasingly interested in data on their employees' experience in health plans. What kinds of utilization data have employer groups requested, or do you anticipate such requests in the future?

Health Insurance Plan of Greater New York

by Bernard J. Neeck and Daniel P. Kennedy

Introduction

The Health Insurance Plan of Greater New York (HIP) is the country's second largest prepaid group practice plan. HIP began operations in 1947, offering medical care on a prepaid group basis. Members were required to carry hospital insurance, which was purchased through Blue Cross, union, or private plans. Hospital coverage was not offered until December 1, 1978, when HIP was certified as a health maintenance organization (HMO).

Responsibility for HIP policy and operations rests with an unpaid Board of Directors composed of 24 individuals. HIP management is responsible for the operation of the plan.

Of HIP's 900,000 members, 777,000 are enrolled in HIP/HMO. Included in these figures are 75,000 Medicare members, 50,000 of whom are covered through HIP/HMO Medicare supplemental contracts. HIP began enrolling Medicare eligibles in July 1966, the first possible enrollment date after the enactment of Title XVIII of the Social Security Act. At the present time, HIP has a cost contract with the Health Care Financing Administration (HCFA).

HIP has entered into a single contract with nine affiliated medical groups. This contract is an all-inclusive document detailing the contractual relationship between HIP and the medical groups. It encompasses the medical groups' responsibilities in providing appropriate medical care as well as HIP's obligations toward the medical groups, including compensation.

Medical care is rendered by more than 1,000 Board-certified or Board-eligible physicians who participate in HIP's nine affiliated medical groups and 53 centers located in the Greater New York area. Members may choose any HIP medical group. Family members, if they wish, may select different medical groups. Within the center, members select their own personal physician. Hospital care for HIP members is provided in two community hospitals affiliated with HIP and in other appropriate hospitals.

HIP has a large computer facility and has many specialized computer systems in operation. Of these, the enrollment system is probably the single most important.

Enrollment system

Background

The enrollment system currently in place at HIP was designed and developed in-house by HIP staff and has been in use since 1968. The current enrollment system is a batch system that is run on an IBM 4381 mainframe computer. HIP is presently developing and implementing a prototype (pilot) system for adding data on line.

The major purposes of the file, as designed, were as follows:

- Verification of eligibility of members.
- Billing of premiums.
- Payment of capitation to medical groups.
- Mailing to members.
- Maintenance of data on maturing of members.
- Production of enrollment statistics.

The management of HIP was concerned about a number of issues, and the system was designed to provide information to address these issues. The major concerns were control of premium income and information for rate setting, the age and sex of membership, membership by contractor, distribution of membership across medical groups, enrollment trends for planning new facilities and new programs, and staffing patterns.

Enrollment file

HIP's computerized enrollment file is the base from which vital information for the operation of the Plan is derived. The file contains the following major data elements for each member:

- First name, middle initial, last name.
- Month and year of birth.

- Home address.
- Sex code.
- Medical group selected.
- Physician number.
- Medical chart number.
- Medicare number, if applicable.
- Coverage effective date.

In addition, for the contract holder only, the file contains contract number (group number), premium period, and rider code.

The file also contains a complete history of changes of data items. These data changes are retained on line for a period of 12 months. Access to further historical data is available on request.

Features of enrollment system

The enrollment file contains a number of features important for the administration of the Plan:

- Online checking of member eligibility by policy number, subscriber name, or dependent name.
- Interface with HCFA for enrollment and premium payment for the Medicare population.
- Interface with the New York City government for enrollment and premium payment for the Medicaid population.
- Daily updating of the file.
- Weekly issuance of identification cards.
- Weekly notification of changes to the medical groups.
- Summary enrollment reports, issued monthly, on topics such as major contractor groups, medical group, type of coverage, and age/sex. (A report writer is available so that user departments can obtain their own ad hoc enrollment reports.)
- Information on maturing of members (e.g., change of status for dependent children at age 19, eligibility for Medicare).
- Reconciliation of enrollment file with contractors' records.

HIP is considering the need to redesign the enrollment master file to handle future new products and further support the need of company management for ad hoc reports. To this end, we are currently evaluating the purchase of an automated data-base management system to handle enrollment and utilization files.

Recently, HIP installed a prototype online system at one of our medical groups. The system permits verification of enrollment, schedules appointments, and produces automated encounter reports. Current enrollment data from the HIP enrollment file are loaded into the system each week.

Support files

Contractor file—This computerized file contains major data items pertaining to the contractor, such as name and address, name of the benefit administrator, name of the HIP marketing representative handling the account, past and present premium rate information, billing data, account anniversary date, and codes describing the benefits purchased.

Physician file—The other major support file is the computerized physician file, which contains data on physicians approved by HIP's Medical Control Board. The Medical Control Board is composed of 21 physician members, one-half of whom come from HIP and one-half of whom are distinguished faculty members of New York teaching hospitals. To be considered as a medical group physician, an applicant submits detailed documentation concerning his or her medical education and background to HIP. This information, together with the curriculum vitae, is submitted to the Medical Control Board for review. Only after a positive vote from the Medical Control Board can the physician work for HIP. Data elements include physician's name, New York State and New Jersey license numbers, HIP identification number, medical specialty codes, board specialty status, medical group affiliations (current and past), hospital affiliations, date of birth, and sex. This file is updated daily and contains information on terminated physicians as well as those currently active.

Utilization system

HIP undertakes a coordinated centralized effort to have an effective utilization reporting system in place for all medical and hospital services. This enables us to monitor costs and recognize emerging utilization patterns. Data on utilization by medical group and service specialty also provide a basis for planning new facilities or programs and determining staffing patterns, as well as providing information required by regulatory agencies and contractors.

HIP has a number of different systems that maintain data on utilization of the following types of services:

- Encounters with professional staff affiliated with medical groups (in and out of hospital).
- Services provided on a referral basis by consultant specialists providing tertiary care.
- Hospital utilization by our HMO membership.

Each system is described separately.

Encounters with medical group staff

Information on face-to-face encounters with professional staff members is manually entered on encounter forms. These forms are processed in the Research and Statistics Department, and aggregate totals of services by individual physicians, nurse clinicians, and physician assistants are entered into a computer system each month. The major data elements in the computerized file are:

- Number of visits.
- Provider name and specialty.
- Month and year of service.
- Medical group/center where service was provided.
- Location of service, i.e., in or out of hospital.

The system does not contain information on individual members receiving service or details on diagnosis/problem or procedures performed.

The enrollment system and the reports generated enable HIP, on a current basis, to obtain all data relating to services provided to our members. The physician encounters are reported by specialty for each of the medical groups. The system provides HIP management and the medical groups with reports and tables showing the physician utilization rates of services per enrollee, as well as the number of services provided by individual physicians. This information is available for each medical group. Other information details utilization by age and sex for each medical group, as well as the number of services provided in each specialty, including services performed by the Centralized Laboratory Service. Groups that have higher or lower utilization than anticipated are reviewed by our Quality Assurance Program.

The aims of the Quality Assurance Program are not only to identify potential problems but to work with central management and medical group leadership to quickly correct problems. The program's professional staff conducts performance surveys based on protocols covering administrative and clinical activity at the medical group level. A comprehensive profile of each group is provided to both the medical groups' management and senior management at HIP for appropriate joint action.

As part of ongoing efforts to make the system operate more effectively and efficiently, HIP and its affiliated medical groups began planning, in 1984, a major program for automation of medical group support systems. One of the planned programs will result in automated encounter reporting, with data entered at the medical groups and transmitted to Central HIP for additional processing. Some of the data elements that will be captured in the new system are:

- Member identification.
- Diagnosis.
- Reason for visit.
- Procedures/services provided.
- Provider identification.

The automation program will be operational in pilot locations during 1986 and will be expanded to all medical groups thereafter.

Services by consultant specialists

Rare or highly technical procedures that would be uneconomical to provide in each medical group are paid from the Special Services Fund maintained and financed by HIP. These procedures are performed by consultant specialists under contract with HIP. They include, for example, cardiac surgery, neurosurgery, certain transplant procedures, and reconstructive plastic surgery including skin grafting.

The consultant specialist, on completion of the authorized treatment, submits the medical group's referral form to HIP for processing and payment. These referral forms are also used by HIP to develop utilization reports. The following data are entered into the computerized Special Services Fund file:

- Patient's policy number, contract number, medical group, date of birth, sex, and relationship to subscriber.
- Date of service.
- Codes identifying Medicare or Medicaid status.
- Code number and specialty of referring group doctor.
- Code number and specialty of consultant specialist.
- Current procedural terminology (CPT) code number identifying type of treatment rendered.
- Amount of approved payment.

Based on this information, utilization reports on services provided and costs of these services are developed by medical group and procedure.

Hospital utilization

The hospital utilization data for non-Medicare HIP/HMO members are derived from the computerized hospital claims file. This file is updated daily, and reports are periodically run from it. These reports summarize services by medical group, hospital, age and sex of patient, and type of service.

The major data elements in the computerized file are:

- Patient's policy number, contract number, medical group, date of birth, sex, and relationship to subscriber.
- Hospital code.
- Date of admission.
- Number of paid hospital days.
- Diagnostic information based on the Ninth Revision of the International Classification of Diseases, including type of service.
- Amount paid to hospital.

The hospital utilization reports generated from the enrollment system enable HIP to monitor total cost and hospital days per 1,000 enrollees for the Plan. Also, the reports enable HIP to monitor cost and days by medical group as well as diagnosis. Variations from targeted costs and days are investigated.

Medicare claims are processed by Medicare carriers, and utilization data are not provided to individual insurers.

Data requests

HIP receives requests from regulators, contractors, business associations, and other health care coalitions for enrollment, cost, and utilization data. These requests are for aggregate data as well as specific breakdowns, such as for age and sex.

Utilization and enrollment data for Medicaid eligibles enrolled in HIP are provided on a regular basis to the New York City Department of Social Services. A Medicare Cost Report reflecting the reimbursable cost for Medicare beneficiaries enrolled in HIP is sent to HCFA. Enrollment information concerning members insured through the Federal Employees Health Benefit Program is provided to the program.

Over the last few years the requests for data have increased significantly. HIP has responded to these requests whenever possible and will continue to do so in the future.

Management information system operating costs

For the 1986-87 fiscal year, HIP anticipates a total expenditure of $5 million for the Management Information Systems Department. This figure includes the cost of computer rental and professional staff as well as overhead items such as rent and utilities. The present HIP enrollment is 900,000 members, so this results in a cost of $0.46 per member per month. This expenditure estimate includes the enrollment system's expense as well as the costs of providing other data processing services to HIP Central, medical groups, contractors, and regulators.

Chesapeake Health Plan, Inc.

by Joseph L. LaAsmar and Mary B. Tierney

Background

The Chesapeake Health Plan (CHP) is a nonprofit, State-licensed health maintenance organization (HMO) in the State of Maryland. It began operations on the grounds of Baltimore City Hospital (now Francis Scott Key Medical Center) in July 1976 under a prepaid Title XIX contract with the State of Maryland. In 1979, CHP was licensed to operate as a State-certified HMO. From 1979 to 1981, CHP marketed chiefly to the population eligible for Medicaid (i.e., Maryland Medical Assistance). In 1981, the Plan began the process of marketing to the private sector.

Further, CHP management made the decision to expand from their original five sites, which were located mainly in East Baltimore. Those original sites were operated through a contract for physician services with Chesapeake Physicians, P.A. (CPPA), a large multispecialty group practice. The decision was made to contract with additional existing provider groups and hospitals to provide a comprehensive Baltimore-wide network serving an enrollee patient population from both Medical Assistance and private sector populations. We also decided to enter the private market in Anne Arundel County, starting in Annapolis and expanding through Severna Park and Glen Burnie.

At the same time that we were making our expansion plans, the Robert Wood Johnson Foundation announced a grant competition entitled "A Program for Prepaid Managed Health Care." The grant specifically concerned the Medicaid-eligible sector. Chesapeake Health Plan applied for the grant and was one of 12 awardees from across the country. The purpose of the project is to test whether we can enroll the Medical Assistance population, provide high-quality health care, and develop utilization review programs and techniques for the benefit of patients, providers, and third-party payers alike. Since the award, we have been engaged in the task of expanding our provider base and our Medical Assistance and private sector enrollment. The management information system (MIS) is playing a crucial role in marketing, quality assurance, and utilization review as we expand in metropolitan Baltimore and Anne Arundel County.

Purposes and objectives of MIS

At the time the MIS was first being developed, the purposes and objectives were quite different from our present needs. The objectives considered during the developmental stage included:

- Automating and increasing the speed of processing for all types of data.
- Enhancing the accuracy of data, data outputs, reports required by various regulatory agencies, and internal reports.
- Devising Plan management standards and comparisons through review of utilization data by age, sex, and employer group.
- Improving clinical management standards and comparisons (e.g., for physician productivity—visits per week, per month, and so on) through use of data on such variables as length of visits and type of patient and problems seen.
- Implementing medical quality assurance by reviewing automated medical records for given diagnoses and comparing the data with standards set by a quality assurance committee.
- Developing a utilization review system in which data—including data on specialty referrals, emergency room use, and hospitalization by physician and by health center site—are monitored.
- Developing an automated medical record that includes problem lists, pharmaceutical orders, and the interaction of drugs with other drugs and forms of therapy.
- Running clinical trials and other basic medical research studies.

Over the years, the objectives of the system have been changed and simplified. Our main concerns are now to provide enrollment and demographic information, utilization statistics, and financial information. Despite the changes in objectives, the system remains an encounter-driven system that allows for clinical and plan management. Unlike some other systems, its main purpose is not solely to address financial concerns such as claims processing and billing.

Description of data

Our management information system is a hybrid that utilizes existing hardware: Nixdorf, IBM, and molecular interfaces. The main system is encounter driven. Demographic information on the enrollee is updated at the time of an encounter. In addition, an encounter form is generated at each visit. The encounter form serves a dual purpose. The first page of the form becomes a permanent part of the medical record. The second page is imprinted through a carbon. Various procedures ordered, such as a complete blood count, are translated on the second page with their corresponding current procedural terminology (CPT) code. The second page of the encounter form is forwarded to be keypunched into the computer. The reports (outputs) generated provide information in the categories of enrollment, utilization, and financial statistics. (Figure 1 outlines the Ambulatory Care Encounter System used by the Chesapeake Health Plan.)

Enrollment data

The enrollment data provide demographic information such as age, sex, family configuration, location of work and home. For those enrollees who are Medicaid eligible, the system provides information concerning category of eligibility, such as Aid to Families with Dependent Children or Old-Age Assistance. It also indicates at which of our various sites the person is enrolled.

Utilization data

The utilization data provide information for three overall categories: patient profiles, physician profiles, and aggregated utilization statistics.

The patient profiles can be linked for a particular patient/enrollee. Information that can be retrieved on request includes:

- Problem lists by individual patient and attending physician.
- Detailed automated medical records that include diagnosis for each encounter, pharmaceuticals prescribed by encounter, referrals made by encounter, and attending physician.

The physician files supply reports on individual physicians and include the following:

- Monthly activity by provider (i.e., number of patient encounters per month).
- Diagnosis by provider.
- Specialty referrals made per 100 encounters.
- Laboratory procedures ordered per 100 encounters.
- X-rays ordered per 100 encounters.

Aggregated utilization files include:

- Total number of referrals to various specialists by department—orthopedics, dermatology, etc.
- Hospitalization by health center site and provider.
- Ancillary services (i.e., prescriptions, laboratory procedures, and X-rays) by site and provider. The average numbers of prescriptions per encounter and laboratory procedures per encounter are calculated for the report.
- Statistics by site and by provider. Encounters are calculated by sex, age, and diagnostic class.
- Statistics on diagnoses. The top diagnoses file lists the 10 most common diagnoses for adults and pediatric patients.

Financial data

A monthly trial balance is provided, as well as information on claims processed and paid. The system also generates checks for claims to be paid. Unlike many systems now in operation, our MIS was designed in-house, so the Plan did not have to adapt to an existing system sold by outside vendors. Its design was a physician-guided effort. Thus, the major emphasis of the MIS is on clinical and plan management rather than on being a financial claims payment system only.

Uses of data

Specifically, the system is used now for utilization review and quality assurance, billing for coordination of benefits, and claims processing for and reports on specialty physicians and inpatient hospital stays. The MIS allows us to compute capitation payments to provider groups who are providing services on a contractual basis. For example, in obstetrics and gynecology, we total the previous year's actual payment experience by the total membership and derive a capitation payment per member per month. The system's aggregation of the data by provider, by enrollee, and by market area is particularly important for utilization review, financial management, and plan management (such as marketing).

The system is used for marketing in both the private and public sector. Using the demographic information available to us, marketing staff is able to compute rates for the private sector and pinpoint areas of the city to be targeted for intense marketing efforts. We have the capability to review primary and specialty physician utilization and hospitalization rates by employer and other groups (i.e., Medicare, Medicaid). We also have data on age and sex cohorts by these groups. We are considering the possibility of experience rating private employer groups depending on their utilization of services.

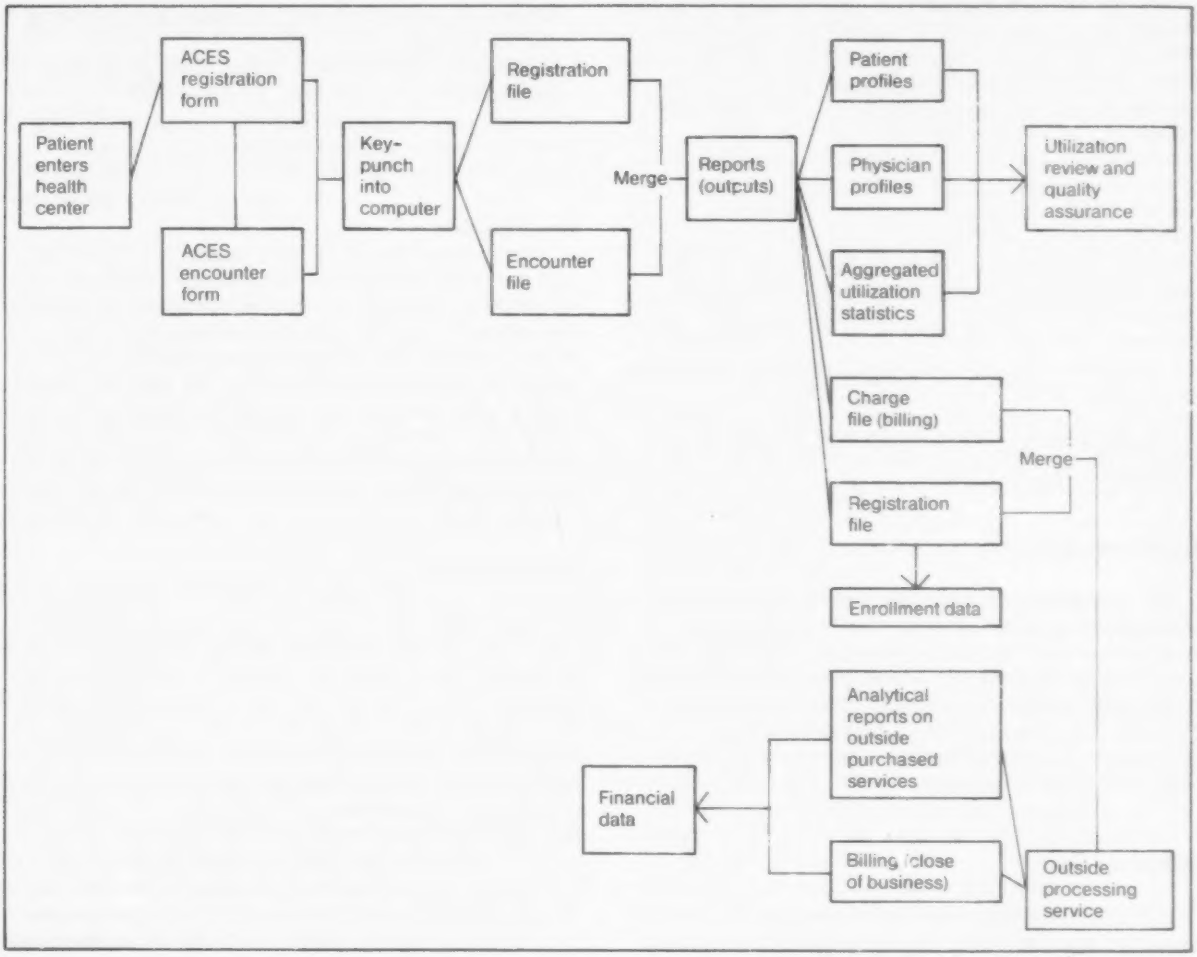
Reports are generated on a weekly, monthly, and quarterly basis. The data are aggregated by provider, by site, by specialty of the provider, and by financial class and/or group.

The variables we analyze that are of greatest importance relate to utilization patterns by providers and enrollees. They are:

- Number of referrals by provider per 100 encounters.
- Number of laboratory procedures by provider per 100 encounters.

Figure 1

Ambulatory Care Encounter System (ACES) management information system


Patient enters health center
ACES registration form
ACES encounter form
Key-punch into computer
Registration file
Encounter file
Merge
Reports (outputs)
Patient profiles
Physician profiles
Aggregated utilization statistics
Utilization review and quality assurance
Charge file (billing)
Merge
Registration file
Enrollment data
Analytical reports on outside purchased services
Financial data
Billing (close of business)
Outside processing service

- Number of X-rays by provider per 100 encounters.
- Inpatient utilization by provider, by site, and for the Plan as a whole in terms of days per 1,000 enrollees and admissions per 1,000 enrollees.

The utilization data by provider are supplied to each site medical director, who can use the data to modify provider behavior vis-a-vis specialty referral, laboratory usage, hospitalization, etc. Individual and site utilization patterns are compared with Plan-wide standards, which are set by the Quality Assurance/Utilization Review Committee. For example, we would expect that 10 of 100 pediatric encounters (under 19 years of age) would result in a specialty referral, whereas 30 of 100 adult medicine encounters would be referred to specialists. If a primary care provider's referral rates consistently vary more than 10 percent from the standard, his or her referrals could be reviewed individually by the medical director. In some cases, prior approval for referrals may be necessary.

We also analyze costs per day for all hospitals in the area. These data include the basic facility costs, laboratory charges, and X-ray charges. We have been able to pinpoint certain hospitals that have excessive facility and ancillary services charges. We have several options. For example, overutilization of ancillary services has been of special concern in teaching hospitals. In response, management has met with hospital administrators and chiefs of services with regard to the use of inpatient ancillary services. If the problems cannot be resolved, we have, from time to time, steered admissions to other facilities that provide high-quality care at a more reasonable cost.

We also perform special analyses that include data from patient satisfaction surveys. The analyses may address studies about waiting times for appointments with primary care and specialty providers. We have also run special analyses that allow us to improve patient management. For example, when the new Hemophyllis Influenza B (HIB) vaccine became available, we developed a program to identify all children aged 2-5 years. We then contacted the parents of all these children, advising them to bring the children into the health centers in order to receive the HIB vaccine.

Finally, several of these information subsystems are on line. They include the registration file, which has demographic data. This information is used daily to update information on individual enrollees, such as additional health insurance carried by the enrollee, address changes, and additions to the family. Individual patient health histories, including problem lists, medications, referrals, and hospitalizations, are also on line. Physician profiles of their patient population by diagnosis are available.

Costs

Costs for maintaining these systems and reports are quite reasonable. Costs on an enrollee basis can be determined by aggregating the per-encounter costs generated each time the system supports a face-to-face enrollee visit with a provider. The cost per encounter is approximately $1.45, excluding corporate overhead and indirect charges.

Cost per encounter can be broken down as follows:

Total:	$1.45/encounter
Personnel:	$0.72/encounter
Forms:	$0.07/encounter
Machines and equipment:	$0.14/encounter
Specialty referrals and billing:	$0.52/encounter

Chesapeake Health Plan enrollees average four encounters (including specialty visits) per year. Therefore, the estimated cost per enrollee is $5.80 per year, or $0.48 per enrollee per month.

Requirements for future systems

After 4 years of using our MIS, we have made some changes. Some on-line capabilities of the computerized medical record have been dropped, although the statistics are still available on request. We have also felt a need to revise and simplify our reports. Many of the hard-copy reports are very complex and detailed, making them difficult to utilize by inexperienced persons. We are interested in providing reports which would allow management to review physician practice patterns vis-a-vis referral rates, use of ancillary services, hospitalization rates, and referrals to emergency rooms. In addition, marketing and management need utilization reports by employer group in order to develop rates and to key in on specific marketing areas and groups.

We are now in the process of revising our MIS. An effort is being made to simplify future outputs in order to make them more immediately useful to line management. We anticipate that marketing, utilization, and financial data will remain of utmost importance. At the present time, employer groups have not requested utilization data on their employees. However, we would not anticipate any problems with providing requested information.

Finally, we believe that the development of a management information system is an evolutionary and ongoing process. We intend to reevaluate the system in order to make it useful in the management of our HMO.

M.D. IPA Health Plan

by Gino A. Nalli

Introduction

M.D. IPA is a health maintenance organization (HMO) serving the Greater Washington-Baltimore area. In operation since January 1981, it now has a membership of approximately 90,000. Services are provided through a network of about 2,000 providers and most of the hospitals in the area. M.D. IPA originally entered into a Medicare cost contract for its approximately 1,500 Medicare members. Since early 1986, however, it has operated under a risk contract. M.D. IPA is a for-profit corporation, its stock owned principally by physicians.

Management information system

On one level, the objective of the M.D. IPA management information system (MIS) is to automate those administrative processes that are necessary for the accurate and timely identification of enrolled members, collection of revenue, and payment of claims. Of equal concern, however, is the need to provide timely data necessary to the management of the prepaid program, particularly with regard to evaluation of our experience with various enrolled populations (i.e., commercial, Federal, individual, and Medicare). This information enables senior management to initiate appropriate program refinements. The information necessary for program management is provided by the data collected through the administrative enrollment and claims payment processes. A final objective is the ability to manipulate and format the data produced through the MIS to respond to a series of "what if" questions. This capability is considered critical to ensuring flexibility in the management process.

The M.D. IPA information system is an in-house, interactive, data-based MIS. Hardware is the Honeywell Level DP-6 with firmware provided by Ultimate Corporation. The PIC operating system is utilized. M.D. IPA purchased access to the software from Comtec Corporation, which developed a basic MIS package for the HMO industry. Comtec provided significant customization of the product to meet M.D. IPA's specific operational configuration. Enhancement of the MIS is a continuing activity as the needs and design of M.D. IPA evolve. These changes are presently accomplished by an in-house MIS staff.

The MIS manager, who reports to the Vice President of Operations, is responsible for day-to-day operations of the system, programming, hardware enhancements, and establishing department objectives and priorities. The MIS staff in 1986 includes two full-time development programmers, one full-time maintenance programmer, a personal computer coordinator, and two part-time operations coordinators. The direct operational costs for MIS in 1986 total approximately $225,000, or $0.22 per member per month.

The basic reference files in our MIS are member, group, provider, procedure and diagnosis, and encounter history. The basic features of each file include:

- *Member*—Demographic information about the subscriber and dependents enrolled in the Plan.
- *Group*—Billing information about each membership group (i.e., rates, benefits, plan, and contract date).
- *Provider*—Descriptive information about contracting physicians and other providers that is necessary to determine payment status.
- *Procedure and diagnosis*—Listing of allowable diagnoses and procedures for coverage.
- *Encounter history*—Data about actual utilization experience and costs for services provided.

Data manipulation within each file can be easily accomplished with an integrated report generator, for example, an analysis of subscriber residences by ZIP Code. Analysis of data among major reference files usually requires specific programming, which is provided by in-house staff.

The MIS enrollment system is derived from the member and group reference files. The utilization system is derived from the member, provider, and encounter history files. Both components of the MIS are critical to the operation of M.D. IPA.

Periodic reports are generated for utilization analysis, rate setting, financial reporting, market analysis, and other specific management inquiries. The online interactive capability of the system permits data aggregation at different levels, depending on the specific need. For example, member utilization by primary care specialty can be reviewed vis-a-vis utilization by all primary care services vis-a-vis all physician services. Standard reports are, in general, directed to monitoring volumes and costs. Aberrations in these monitoring reports often trigger special analysis to determine influencing factors and causes. For example, deviations from budgeted revenues per member per month would result in an analysis of variances in average contract size, average family size, and subscriber contract mix.

Future concerns

As HMO's increasingly penetrate the health care market, employers are demonstrating a growing interest in understanding the pricing, risk sharing, and benefit configuration of HMO's. Self-insured employers are particularly vocal with regard to these issues because premium expenses and any savings as a result of efficient utilization methodologies are outside their control and do not benefit them.

This national employer trend is certainly being felt at M.D. IPA, and we anticipate that the trend will continue to grow. To date, however, employers have been imprecise in articulating specific information requests. Confidentiality issues certainly exist. More fundamentally, however, employers are wrestling with questions concerning what constitutes a reasonable basis on which to deal with HMO's and what constitute the measures by which they can evaluate the relationship. Increasingly, M.D. IPA finds itself working with employers and reaching a consensus as to which data are appropriate to the employer needs as well as available through our organization's MIS.

Group Health Cooperative of Puget Sound

by Gail L. Warden and Michael E. Wagner

Introduction

Physician oversupply, excess hospital capacity, prospective reimbursement practices, and the persistent rate of medical care cost increase are driving health care providers, insurers, and purchasers to develop relationships that blur traditional distinctions. Many aspects of emerging health care arrangements mimic existing health maintenance organizations (HMO's). Information requirements and data systems that meet HMO administrator needs are applicable to these emerging delivery systems. At the same time, HMO information requirements are becoming more complex. What are these requirements and specific data needs and what are the implications for HMO data systems? These questions are answered in the context of a brief overview of differences between HMO's and traditional fee-for-service systems and the effects on HMO's of marketplace and health care policy changes.

HMO's in transition

Health maintenance organizations straddle two businesses; they both provide and insure health care. They are at risk for providing generally comprehensive care within the constraints of fixed prepaid revenues. This dual business perspective and a fixed income per enrollee motivate significantly different behavior and information needs when compared with the traditional fee-for-service health care system.

A few large HMO's have been established for many years: Group Health Cooperative of Puget Sound, a 350,000-member Northwest HMO, celebrates its 40th anniversary in 1987. However, the dominant model within the U.S. health care system has been charge-reimbursed fee-for-service medicine. In the early 1970's, Dr. Paul Ellwood, frequently referred to as the Father of the HMO Act, concluded that charge-based reimbursement practices rewarded providers for intensively treating illness in hospital environments and discouraged the practice of preventive medicine; prepaid HMO's, with a ceiling on revenues, encouraged aggressive preventive care, emphasizing early detection and ambulatory treatment in order to reduce expensive hospitalizations. His observations have been substantially validated by the Rand Experiment in Economical Care (Enthoven, 1985). In this longitudinal study, it was found that Group Health Cooperative provided overall care at 28 percent less cost and had hospital admission rates and days fully 40 percent lower than those for comprehensively insured patients in the fee-for-service medical system. Most importantly, these savings were achieved with equivalent health outcomes in a population not biased toward atypically healthy individuals.

For HMO's, the days of this "natural" cost advantage over the fee-for-service sector are ended. Tax Equity and Fiscal Responsibility Act legislation implemented prospective reimbursement practices for Medicare beneficiaries. Prospective reimbursement has been quickly extended to non-Medicare populations by insurers. In the fee-for-service sector, these changes, coupled with employer initiatives to contain costs, have sharply reduced numbers of admissions and increased the number of outpatient visits. To remain competitive with leaner fee-for-service cost structures, HMO's must increase the sophistication of their information systems.

HMO trends

Health maintenance organizations directly provide care or contract for medical services from primary care and specialty or hospital providers in a variety of arrangements, usually described by model type (staff, group practice, individual practice, or primary care network). Different information needs have traditionally been ascribed to each delivery arrangement. Differences have been overemphasized; data needs are equivalent across models.

The information needed to rate plans is increasingly complex. The 1973 Health Maintenance Organization Act dictated that HMO premiums be based on the average cost to provide care for all enrollees (community rating). Only recently have amendments to the act permitted alternative rating methods. Employers now press for rates based on experience or class risk rather than average cost.

Businesses, seeking to control employee benefit costs, increasingly demand leaner mix-and-match benefit packages. Indemnity insurers are eager to fill this need. HMO administrators must be able to respond flexibly.

In contrast to past conditions, each of these trends increases the need for detailed, rather than aggregate, enrollment, cost, and utilization data across five arenas.

Information requirements

Health maintenance organization administrative data needs may be broadly classified as:

- Planning.
- Assessing risk and designing and pricing products.
- Securing the delivery system.
- Managing plan performance.
- Assuring quality of care and customer satisfaction.

In addition, HMO administrators provide information for several "publics," each viewing these areas from its own perspective. The publics include the directors and managers of the HMO; customers, both members and employers; providers; legislative, financing and regulatory bodies; and investors (in for-profit settings). What are the data needs for each area?

Planning

The focus for planning activities within HMO's is shifting away from the traditional emphasis on facility or departmental planning toward program-based planning. Program-based plans emphasize the continuity and outcome of health care across all providers and services. Group Health Cooperative (GHC) has developed a number of program plans addressing such dimensions as eye care, musculoskeletal care, pediatric care, women's health care, and cancer care. For example, GHC's cancer care program plan coordinates risk assessment, screening, and prevention activities with ongoing medical care. Through well-defined protocols, it links primary care physicians and practitioners in specialty, hospital, skilled nursing, home therapy, custodial care, hospice care, and psychosocial service arenas. Care delivery plans are then tied to capital and staff planning and to research activities.

Information systems that facilitate this type of planning require not only a high degree of integration of internal enrollment, clinical, claim, utilization, and cost data, but also the ability to include external data. Examples of external data include trends in marketplace demographics and health risks, characteristics of health care providers operating in the marketplace, market potential, competitor data, expressed employer needs, and public policy directions.

Risk, product design, and pricing

With relaxation of the community rating requirement, accelerating demands for alternative benefit packages, purchaser requests for experience rating, and the production of new competitive products stemming from innovative alliances between commercial indemnity insurance companies and providers, HMO administrators are faced with product definition and pricing problems analogous to those of the commercial insurance industry.

Commercial insurers have broad experience in underwriting procedures that protect against adverse selection. They have developed flexible funding arrangements for large clients. The arrangements utilize, individually or in combination, varied techniques such as experience-rated contracts, retrospective rating plans, "cost-plus" plans, "reserveless" group insurance, minimum premium contracts, and stop-loss risk sharing. HMO administrators must address rating requirements for benefits using commercial insurance underwriting techniques (Witter, Bluhm, and Wang, 1986).

HMO data systems must effectively link exposure (enrollment) data with claim and cost data for predefined underwriting categories. Often this is difficult, particularly for staff and group model HMO's, which do not track the detailed service data.

Exposure data include such characteristics as rating category, number of dependents, and subscriber months exposed and corresponding data on income, group, industrial classification, and geographic area matched with exposure period. Claim data include such characteristics as patient age and sex; subscriber-patient relationship; provider identification; place and date of service; discrete services provided, with associated costs; and diagnosis and adjudication information (plan, group, coverage, copayments, capitation- and claim-paid amounts). Traditional community rating does not require detailed service cost data. This presents a particularly acute problem for staff and group models that formerly had little need for discrete service information.

Appropriate statistical techniques must be applied to exposure and claim data to price health care benefits. This is particularly true for smaller groups for which direct cost experience as measured by last year's claims is not an actuarially valid basis for setting rates. Rates must be based on the risk associated with the exposure. For this reason, it is mandatory that employers provide relevant data. In order to support requests for tailored benefit packages and class- or experience-based rates, the data provided must minimally include age and sex distributions of employees and dependents.

Securing the delivery system

HMO administrators contract with physicians and facilities to provide care in a variety of ways, ranging from directly employing staff and owning and operating facilities to individual practice and preferred provider agreements. In each agreement, HMO administrators and medical directors must focus on cost control while maintaining standards of care.

To achieve these objectives, a variety of delivery and contractual arrangements have been developed. Primary care physicians typically perform a "gatekeeping" function. The intent of gatekeeping is to deliver as much care as possible in the primary care setting, reserving more costly specialty and hospital resources for only those patients requiring such care. Gatekeeping with salaried staff has traditionally been accomplished through internal protocols and peer review. Group, network, and individual practice arrangements usually rely on capitation agreements by which some portion of the capitation is set aside in a risk pool. This risk pool is distributed only if specialty referral and hospital costs are within expectations. Where volumes justify, capitation arrangements may also be negotiated with specialists, hospitals, and long-term care facilities.

HMO data systems must therefore produce information to support distribution of incoming premiums to capitated provider categories and provide for corresponding risk pools. At GHC, this is accomplished by linking each enrollee in the membership system to the enrollee's primary care physician. Simultaneously, the HMO data system must be able to track the gatekeeping physician's management of primary, specialty, referral, and hospital utilization. GHC employs internal and external specialty referral protocols and has developed corresponding computer systems for referral management. Case management systems are used to coordinate care under program plans.

Utilization data simply tabulated by physician are inadequate for administering risk pools when the demographic characteristics of the physician's "panel" (assigned patients) varies. GHC defines age and sex cohorts with associated utilization factors to standardize primary care panels. Primary care panels are inadequate predictors of specialty care utilization, however. Case-mix characteristics are required if specialty care is capitated. Therefore, data on diagnosis, diagnoses-related group (DRG), and severity of illness should be linked to specialty utilization patterns.

Preferred- or designated-provider agreements are commonly used to secure hospitalization and other facility-based care. Claims and utilization data systems must provide information to support multiple reimbursement schemes, including such combinations as reasonable and customary, fixed discount, volume-based discount, and geographic-area-specific schedules.

Managing plan performance

HMO administrators and medical directors must manage plan performance in several domains. These domains include marketing and membership objectives, financial performance, health service delivery, product line performance, practitioner and provider performance, and quality of care.

Operational performance data—The most complete distillation of critical performance measures and required data for HMO administrators is described in a monograph for HMO managers (Birch & Davis Associates, 1983). In this study, conducted for the Office of Health Maintenance Organizations, management reports solicited from 45 HMO's were summarized. Marketing–membership, financial management, and health services delivery domains are addressed. Representative examples of summary data include:

- Summaries and analyses of membership, contracts, and accounts.
- Analyses of revenues, expenses, and profits per member per month.
- Analyses of hospital, physician, and other outpatient medical costs.
- Key financial and operational indicators.
- Analyses of hospital, physician, and other outpatient service utilization.

Most existing HMO data systems are insufficiently integrated to easily produce these indicators.

Product line performance data—As multiple benefit structures evolve, product lines emerge. Few HMO data systems have the capability to monitor the performance of specific product lines. Data to support such analyses require development of benefit categories and levels typical of commercial insurance products. Examples include describing benefits (products) in terms such as basic health plan, dental coverage, vision coverage, prescription drug coverage, and long-term care insurance. Within product categories, levels of coverage must be specified, such as a split between high and low options of the basic health plan or between hospital and medical/surgical benefits. Adjudication systems for processing claims must attach costs and assign services to specific utilization categories corresponding to benefit structures. Cost data by category must then be matched to corresponding allocations of incoming premiums. Among the more difficult problems in this area is the typical lack of mature cost-accounting systems in staff or group model HMO's. In the community-rating era, sophisticated cost accounting was an unnecessary "overhead" expense. GHC is installing enrollment and claims systems derived from the insurance industry that are capable of tracking our various product lines and benefit plans. Although predominantly a staff-model HMO, GHC tracks both claims and internal encounters and is employing increasingly sophisticated cost-accounting techniques.

Practitioner and provider performance data—Practitioner and provider performance management hinges on the ability of the HMO administrator and the medical director to influence specific practitioner behavior while maintaining standards for quality of care. With the strong tradition of physicians autonomously determining practice styles and being reimbursed on the basis of production of services, this represents a unique challenge, particularly in nonstaff models. It is the critical variable in achieving cost control.

Physicians must be given constructive, direct, and useful feedback on their practice styles. Among the more effective approaches is production of peer-comparison reports for selected utilization measures. GHC uses a number of peer-comparison reports to provide physicians with objective data by which they can evaluate their own practice styles.

In the primary care setting, key variables include referral rates to specialists, hospitalization rates and lengths of stay by DRG, use of substitute facilities for inpatient care such as surgery centers, and use of major ancillary department services (particularly prescribing patterns for pharmaceuticals). To be meaningful, utilization and cost data must be standardized for the demographic characteristics of patient panels.

In specialty and hospital settings, key variables include unusually costly ambulatory procedures, secondary referral rates to other specialists, hospitalization rates and lengths of stay by DRG, use of substitute facilities for inpatient care such as surgery centers, and use of major ancillary department services. To be meaningful, utilization and cost data must be standardized for the case-mix characteristics of specialty workloads.

To be useful both primary and specialty physicians, data must be succinctly presented. Therapeutically equivalent but less costly alternatives must be identified. This is particularly true for drugs in nonstaff models where a formulary is not in place and where wide variations in the costs of equivalent drugs prevail.

Assuring quality and customer satisfaction—The bottom line to health care is its efficacy in maintaining or improving health status and satisfying the customer at acceptable cost. Efficacy of care is measured in terms of outcomes that span long periods of time. HMO administrators must take a longer view than the next quarter's profit performance in this area. This is part of the impetus behind program planning, as described previously. It represents a fundamental shift from the past focus of managing care on the basis of discrete events such as the cost of a visit or a hospitalization. Little research has been done in this area to define specific data needs. However, general statements can be made.

Measures of health risk and health status are required. Both measures are critically dependent on careful integration of clinical data systems with administrative systems. Risk factors include lifestyle habits such as patterns of smoking and alcohol use as well as clinical parameters such as cholesterol levels. Health status data include measures such as bed-disability days as well as clinical parameters such as blood pressure and fitness levels. HMO data systems do not deal with these types of data today. Computerized medical records are mandatory before active use of health risk and health status measures is realistic. GHC presently employs several systems to assess risk and health status and to support preventive care protocols. For example, a comprehensive breast cancer screening system is used to assess risk and initiate periodic appointments to primary care and mamography services based on GHC's cancer care plan protocol.

Consumer satisfaction is critical; the member makes the decision to continue care with an HMO. Long-term measures of health status will be meaningless unless the HMO administrator can maintain a reasonably stable enrollment base. Key data required to assess satisfaction include measures of access such as appointment waiting times, complaint patterns, attrition reasons, and malpractice suits. Most often, data in this area are obtained via survey techniques and may be limited. GHC routinely monitors access parameters such as appointment and telephone wait times. In addition, we systematically conduct controlled consumer opinion surveys to assess satisfaction.

Purchasers of health care need to know how effectively HMO benefit plans offered to employees are performing. Financial performance as well as quality of care and employee satisfaction are key indicators. With other factors equal, the employer relies on employee feedback to decide which plans to offer. Employer requests for actual utilization and cost data require careful statistical interpretation. Utilization seldom correlates well with risk for a given period unless based on very large populations. Consequently, purchasers and HMO managers are struggling to identify useful comparators. The Group Health Association of America is facilitating this effort between employers and HMO managers.

Comparative information

The needs described previously relate primarily to the internal management of the HMO and the situation-specific needs of customers and providers. Other publics (legislative, financing, and regulatory bodies and investors) need access to overall comparative data. This need is analogous to the need for hospital industry data that is satisfied largely through data bases and summary reports of the American Hospital Association and Commission on Professional Hospital Activities.

Comparative information needs for the HMO industry are being addressed through the development of Group Health Association of America's National Comparative Database (Brudevold, English, and Reeves, 1986). This data base will contain three major data categories encompassing enrollment, utilization, and financial measures.

- Enrollment data will include such measures as source of membership, contract type, and age and sex distributions. These data will permit analysis of the effects of enrollment on operations.
- Utilization data will include such measures as inpatient services, discharges, and patient days; nonadmission services that substitute for inpatient care such as surgery centers or inhome care; and ambulatory encounter information. These data will permit comparisons with industry and area norms.
- Financial data will include such measures as capital structure and profitability data to provide insight into access to funding, rates of growth, and financial viability. Detailed distribution of expense data will provide insight into corporate strategies as they relate to the U.S. health care market.

Implications for HMO systems

HMO administrator data needs dictate a sophisticated approach to the design of information systems. As the U.S. health care system evolves and traditional distinctions blur, the integration of administrative and clinical data becomes critical.

Current HMO information systems reflect simpler times. Relatively little integration exists among various applications, making it difficult or impossible to respond to both internal and external data needs. Integration, as it exists, is largely based on the need for two operational systems to communicate for routine business transactions. A simple example is the need for the claims processing application to reference eligibility and benefit data maintained by means of the membership application. Clinical systems are poorly integrated. Nonstaff HMO model types normally do not control or link to the clinical systems used by the HMO's various providers. Clinical data are kept, as in the traditional fee-for-service sector, by individual physicians and are not accessible to the HMO except by request or chart audit. The HMO relies on the "bill" submitted by the physician for needed utilization data. This is satisfactory for administrative purposes, but it is only marginally useful for clinical purposes.

HMO administrators need to require vendors and their own management information system departments to address the critical need for integrated systems. The ability to compete effectively will hinge on the degree to which information technology supports operational and strategic planning functions. This requires a data-driven systems design that tightly links marketing, membership, clinical information, claims processing, and financial functions. At GHC, a comprehensive strategic information plan is the basis of a major redesign of information systems.

Implications for health policy

Managed health care systems have the potential for improving the cost effectiveness of health care. A recent survey for the Henry J. Kaiser Family Foundation by Louis Harris and Associates found that 85 percent of the business executives polled agreed that HMO's are effective in containing the cost of health care, up from 59 percent in a 1980 survey (Kosterlitz, 1985).

Recent public policy has concentrated on cost-containment strategies such as those represented in Tax Equity and Fiscal Responsibility Act legislation. For example, the diagnosis-related group prospective reimbursement mechanism focuses on discrete events of hospital care. The aggregate effect of these strategies has slowed hospital cost growth rates. In a limited sense, implementation of DRG's may represent only a shifting of costs to the less visible ambulatory arena. Proposals to apply prospective reimbursement schemes to ambulatory care using ambulatory visit groups (AVG's) are an extension of the current cost-containment strategy. AVG's may result in subsequent cost shifts to other arenas.

Rapid membership turnover is costly, so Group Health Cooperative encourages long-term enrollment. This results in our bias toward practices that contain present costs without shifting them to later years. GHC's emerging experience suggests that lifetime health monitoring has much potential to highlight the benefit of preventive health care to the member and the employer; to discourage overemphasis by providers on event-based productivity measures; and to encourage program planning and operational decisions that effect coordinated care over time and across providers.

If Group Health Cooperative's emerging experience is indicative of the experience of other health care providers, investigating alternative data, financing, and reimbursement mechanisms that focus attention on long-term health status measures, rather than discrete events of care, may be in order.

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Analytic perspective on data needs of health maintenance organizations

by Mark C. Hornbrook, Merwyn R. Greenlick, and Marjorie D. Bennett

Introduction

Information is necessary for efficient and equitable reimbursement of health maintenance organizations (HMO's) participating in Medicare. The answers to three fundamental questions are needed for each HMO: Who is receiving care? Is the payment adequate? What is being paid for? However, like any economic good, information is costly and resources used for its collection and analysis have competing uses. The aim of this article is to develop some guides to appropriate data collection for capitation payment of HMO's for Medicare beneficiaries.

From the perspective of the Health Care Financing Administration (HCFA), one significant consequence of enactment of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) is that the detailed claims expense and utilization records maintained by HCFA for fee-for-service (FFS) beneficiaries and providers are no longer available for Medicare capitation enrollees. Very little information, beyond eligibility data, is being collected by HCFA on capitation beneficiaries. Hence, HCFA program management staff have little knowledge about who or what is being treated by participating HMO's.

On the other hand, from the HMO's perspective, it is significant that TEFRA frees HMO's from the need to collect costly and detailed utilization and expense data that are used solely to meet Medicare data requirements. Imposition of data specifications derived solely from FFS experience may counteract many of the gains of the TEFRA reforms. An optimal HMO data collection system would meet HCFA's need to know who and what is being paid for and what the appropriate payment level is by utilizing, insofar as possible, data that are internally useful to HMO's. To require HMO's to collect data that are not pertinent to their operations, when HCFA could equally well use data that are pertinent, is suboptimal. Inefficiencies are introduced into the administration of HMO's, thereby increasing the total cost to society of providing health care to Medicare beneficiaries. As Donabedian has suggested, HMO's carry a unique ability, and, perhaps, a social imperative, to develop nontraditional approaches to providing high quality health care at reasonable cost. He states: "Not the least among the glittering prospects that the words 'health maintenance organization' evoke is the opportunity to reshape our thinking about what constitutes quality in everyday medical practice and about how that quality might be protected, nurtured, and made to grow" (Donabedian, 1983). Medicare reimbursement should support and encourage this imperative.

Thus, we argue that it is necessary to understand the internal data requirements of HMO's, especially the ways in which they differ from the requirements of the FFS sector, before devising data reporting requirements to meet HCFA's needs. Any data requirements promulgated by HCFA ought to help HMO's perform their basic mission of curing, maintaining, and caring for Medicare beneficiaries in an effective, efficient, and equitable manner. In this presentation, we address each issue in turn.

HMO data requirements

The essential distinction of an HMO is integration of ambulatory care, inpatient care, and risk pooling (i.e., insurance) within a single organization. For a fixed capitation payment, an HMO accepts the risk for all Part A and Part B services required by a Medicare beneficiary. Thus, capitation establishes a

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defined service population and specifies a total budget constraint. These two features present unique demands and opportunities for HMO administrators and clinicians.

The essential analytic impact of this form of medical care organization is that it expands the provider's scope of control to include treatment of the entire illness episode as well as responsibility for preventive services for avoidable illness episodes. This feature distinguishes an HMO from FFS multispecialty group practice, although many HMO's may in fact operate in nearly identical fashion to their FFS counterparts.

In theory, then, HMO's are able to take advantage of all possibilities for saving health care resources by substituting preventive care, ambulatory care, home care, and other lower cost modes of care for more expensive forms of care. This should result in lower overall health care costs than a series of suboptimal solutions determined by multiple providers operating independently, but it imposes information requirements on HMO managers that differ from those on FFS managers; that is, HMO managers need to control the complete spectrum of medical technology and require information systems that support this control. We contend that the procedure-specific focus of FFS providers on price-cost margins means that their information requirements are inappropriate from an HMO perspective.

HMO's have three unique data requirements stemming from the distinctive nature of their output. First, measures of illness episodes are necessary for efficient allocation of acute and chronic medical care resources; second, health risk registries are necessary for efficient provision of preventive services; and, finally, measures of membership satisfaction and health status provide the requisite data for an HMO quality assurance system.

First, supplementing the traditional department-based cost and output accounting systems, HMO's need to have systems that enable development of resource use and outcome profiles for illness and health problem episodes (Hornbrook, Hurtado, and Johnson, 1985). The episode measure represents the essential intermediate output of an HMO. It is required for development of appropriate linkage of resources to health problems in a population with multiple comorbidities and multiple modes of care.

The fundamental concept in any resource allocation scheme is "shadow price," or opportunity cost. Every use of a resource imposes the costs of the forgone value from use of that resource in another application. Even though the HMO does not charge a price for each service or treatment, except for small fixed copayments, every expenditure of resources has an opportunity cost, the benefit that the HMO could have obtained from the next best use of those resources. For example, the shadow price of a coronary bypass procedure is the benefit that could have been obtained by using those resources to treat some other illness episode or to operate a smoking cessation program.

An HMO management information system should assist managers and clinicians to identify these constraints and options. In order to do this appropriately, an episode approach is required. This approach enables tracking of physicians' propensity to hospitalize and to prescribe revisits while controlling for the underlying nature and severity of illnesses, thus enabling definition of opportunity costs in terms appropriate to an HMO. Measurement of hospital case mix via diagnosis-related groups (DRG's) or ambulatory case mix via ambulatory visit groups (AVG's) is quite appropriate for FFS providers. HMO's, in contrast, require an episode case-mix measure. DRG's and AVG's do not provide any information on productivity across illness episodes because each readmission and each followup visit is counted as a separate output. The HMO advantage is not in running hospitals or clinics more efficiently than FFS providers do but in the composition of treatments for illness episodes (Hornbrook and Berki, 1985).

To obtain the highest quality of data possible on episodes, a sampling approach is desired. This could take the form of a comprehensive episode-tracking system for a 5-percent sample of HMO members. Thus, HCFA data requirements should not stipulate that data be furnished on every illness episode because this is not necessary for HMO operations.

Second, a system of health risk registries is required to govern allocation of preventive services in HMO's. Distinct from FFS providers, for which the criterion for delivery of preventive services is whether consumers are willing to pay for them, HMO's are responsible for developing optimal health screening and detection strategies for their memberships. Only a small subset of preventive services ought to be prescribed to an entire population. Most preventive services are more cost effective when administered to persons who meet specified risk profiles (Russell, 1986).

A health risk registry system, including disease registries, provides a systematic approach for detecting those persons among an HMO's members who are eligible for primary and secondary prevention programs, rather than relying on accidental discovery and prescription during physician office visits. Consumer ignorance may result in underconsumption or overconsumption of preventive services, and the HMO offers a means of attaining higher efficiency in this area. Some risk factors that could be included are smoking habits, athletic activities, seat-belt use, oral health habits, breast disease risk, blood pressure, and blood lipid levels.

Finally, a quality assurance system is necessary for an HMO to monitor its overall success or failure. Donabedian (1983) argues that the core of a quality assurance system is client satisfaction. Members' preferences are the ultimate measure of the contribution of an HMO to welfare and well-being. Satisfaction to an HMO member means two things. First and foremost, it means satisfaction with the outcome of care, which is reflective of the technical effectiveness of the medical care system. Did the patient recover completely from the limitations in social and physiological functioning imposed by an illness? Was the recovery timely? Satisfaction also means comfort, convenience, access, and personal attention—the psychosocial aspects of care. Was care available when and where requested? Was it provided in pleasant surroundings by professionals who demonstrated concern for individuals' needs and desires? Because HMO's control the entire spectrum of medical technology, as well as the organization and delivery of services, they have a correspondently greater responsibility for member health status and satisfaction than do FFS providers. Description of an adequate quality assurance system is beyond the scope of this article and has been covered elsewhere. (For example, see Freeborn and Greenlick, 1973.) Some critical elements of an HMO quality assurance system are highlighted in Figure 1.

Given these data needs unique to HMO's, the question of how they relate to HCFA data requirements is addressed next.

Medicare data requirements

The minimum data requirements imposed on HMO's for participating in the Medicare program should relate to administering the reimbursement program and meeting the goals set by social policy. Three critical data needs for HCFA can be identified:

- Administration of the payment system—ongoing determination of the risk levels for HMO memberships.
- Formulation of reimbursement policy—setting the basic value of the core Medicare benefit package for the "average" beneficiary.
- Program oversight—evaluating the accessibility, cost, and quality of care provided.

Each of these needs is discussed.

We begin with the premise that it is appropriate to require that specific data be supplied to HCFA to meet specific well-defined program needs. This is an alternative to requiring the establishment of a general-purpose data base that would be used to address a series of questions to be defined at some future date. It can be argued that there is a potential social cost of wrong or superfluous data availability in terms of inappropriate analyses that may lead to misguided policies (Greenlick, 1975).

Administration of payment system

Under the current TEFRA provisions, Medicare beneficiaries have a choice of FFS Medicare or HMO options where the latter are available. TEFRA also requires that the HMO capitation rate be based on Medicare payments on behalf of beneficiaries in the same geographic area in the FFS sector. These two requirements create the possibility of overpayments or underpayments to HMO's based on favorable or adverse selection in HMO enrollment. To reduce these problems, capitation payments are adjusted to account for differences among HMO's and between HMO and FFS sectors in the health risk of beneficiary subgroups.

In the current methodology, known as the adjusted average per capita cost (AAPCC), age, sex, welfare status, and institutional status are used as risk-adjustment factors. The risk-adjustment process requires symmetrical data from FFS and HMO sectors, because the basic issue is whether the underlying nature of the health problems treated in any HMO differs from the nature of problems seen by the local FFS providers. Capitation payment is a prospective mechanism, so risk-adjustment factors must predict utilization rather than being derived from observed current use patterns.

Although the specific risk factors used may be altered over time, any useful risk factor will relate to individual attributes that are predictive of future disease and propensity to use health care services. Such risk factors are inherent to HMO internal operations by their inclusion in health risk registries and budgeting criteria.

The general requirement for administering a risk-adjustment mechanism is that HMO's furnish two types of data: data for individual beneficiaries on the prediction factors that are included in the risk-adjustment model and data on the total annual cost of health care for individual beneficiaries. The former are part of HCFA's current data requirements, and the latter are not. Moreover, annual cost data must be adjusted for selection bias in case the risk-adjustment model does not account for all of the difference in average annual per capita Medicare expense between the HMO and the local FFS sector populations (Hornbrook, Greenlick, and Bennett, 1986).

Expense data do not need to be furnished on the total population of Medicare beneficiaries. The average capitation payment to the HMO must be correct, not the amount paid for any specific individual with a specific set of risk factors. Data on annual expenses can be achieved via scientifically designed sampling methodology applied to both HMO and FFS sectors. Indeed, a sampling approach is preferred because it enables use of higher quality data on the risk factors. Cost data need only be valid measures of real resource use, not measures of accounting cost. Hence, proxy measures of comprehensive utilization patterns may be employed if they are sufficiently correlated with the true measure.

In sum, given the policy objectives of TEFRA and the methods specified in the TEFRA regulations, an HMO ought to be required to furnish data on risk factors and annual per capita cost for a random sample of its Medicare beneficiaries in order to participate in Medicare. Development of a valid health risk classification system for a population will help both HCFA and HMO's do their respective jobs better.

Formulation of reimbursement policy

Under the current TEFRA provisions, the basic level of capitation payment for Part A and Part B benefits is set by the adjusted average per capita cost of claims in the FFS sector, less 5 percent. This cost differential is not based on any scientific determination of the relative efficiency of HMO's in treating Medicare beneficiaries. Available evidence suggests that a figure of 12 to 40 percent savings for the nonelderly population is possible (Hornbrook and Berki, 1985), and the possible savings for the elderly population are still unknown. The basic problem of establishing the absolute level of Medicare capitation payment has not been satisfactorily solved. The true efficiency gains of HMO's should be reflected in the program costs of Medicare.

The adjusted community rate (ACR) methodology enables use of market forces to determine the basic capitation payment. The ACR is based on the HMO's community rate, which is the cost per member per month to provide health care services to enrolled members and is the basis of the rates that are charged to various groups in the community. The theory behind use of the ACR methodology is that competition among health plans for subscribers will obtain efficiency in providing a standardized package of benefits. This ensures that market prices (i.e., the community rates and the ACR's) are appropriate indicators of the economic cost of providing care to defined populations. The ACR is derived by adjusting the community rate for the age-sex composition of an HMO's Medicare enrollment.

HMO's are currently required to furnish their ACR's to HCFA because, under TEFRA, if the ACR is lower than 95 percent of the AAPCC, the HMO must pass the savings to the beneficiary in the form of additional benefits or return them to HCFA. Use of the ACR instead of the AAPCC to set capitation payments for Medicare enrollees would help to address the issue of selection bias because payment would be based on the members actually enrolled in the HMO. Clearly, the ACR is vital to internal HMO management, so no inefficiency is imposed by its use by HCFA.

Under current regulations, HMO's are required to enroll a majority of non-Medicare members. One problem with this requirement is that it prevents HMO's from specializing in the Medicare population. Such specialization could have significant economic and social benefits. Moreover, the requirement makes it necessary for new HMO's to establish a given level of market penetration before beginning to enroll Medicare beneficiaries. Finally, it increases the minimum market size required for an HMO to operate in any given locale, thus reducing access to HMO's for beneficiaries residing in sparsely populated areas. If this restriction were lifted, enabling an HMO to enroll up to 100 percent Medicare beneficiaries, the ACR approach would no longer be appropriate because the "community" might be composed entirely of Medicare beneficiaries. We argue that there are social benefits to be gained from abolishing the enrollment constraint, albeit this would raise some additional administrative issues.

One possibility is to arbitrarily establish a fixed amount for the Medicare voucher and let the beneficiary pick up the remainder of the premium cost. However, this would involve regional inequities because of differences in the cost of medical care inputs. Beneficiaries living in high-cost areas would have to pay more out of pocket for health care or receive fewer benefits than would those living in low-cost areas. To deal with this issue, the voucher could be adjusted for differences in the cost of the market basket of HMO inputs. Such adjustment would require HMO's to furnish information on the prices, quantities, and types of labor and capital inputs. However, data ought to be collected on the basis of a stratified random sample so that not every HMO would face this burden, and HCFA ought to pay for the data collection costs so as not to create

Figure 1

Elements of a health maintenance organization quality assurance system

Access

- Morbidity survey of a random sample of members
- Assessment of satisfaction with access for a random sample of members
- Assessment and evaluation of self-care behaviors for a random sample of members

↓

Structure

- Accreditation requirements of the Joint Committee on Accreditation of Hospitals
- Periodic review of work-load distributions and peak-load delays and changes in treatments
- Assessment of convenience and attractiveness of facilities

↓

Process

- Automated criteria review of a random sample of episodes
- Automated review of care of all episodes involving patient complaint or cases identified by generic screens
- Concurrent review of a sample of hospital admissions and length of stay and surgical procedures

↓

Outcome

- Survey of outcomes and satisfaction for a sample of health care episodes inequities across HMO's. It is important to emphasize that the purpose here is not to regulate the purchase of inputs by HMO's but to adjust for cost differences beyond their control so that reimbursement inequities among regions of the country are prevented.

Finally, the problem remains of establishing the value of the basic package of benefits for sparsely populated areas that cannot support the competitive HMO market structure needed to create efficient ACR's. In such areas, it is difficult to separate higher costs attributable to smaller scale of operations from higher costs attributable to inefficiency. This creates a need to provide guidance to both HMO's and HCFA regarding the minimum level of the ACR required to provide acceptable quality of health care in rural settings. At the least, an urban-rural adjustment derived from appropriately specified HMO cost functions could be applied to the value of a Medicare voucher. Much more research is required on this problem. Such research would require comprehensive cost and output data on a nationally representative sample of HMO's. The cost of this effort should be borne by the HCFA research budget.

Program oversight

The TEFRA reforms have significant implications for information needs for Medicare program oversight. Under retrospective cost reimbursement, incentives are placed on providers to increase the allowable cost base by shifting to a more resource-intensive style of practice. Hence, a primary policy priority under this system was utilization review to control the expansionist forces inherent in the system. Under capitation payment, providers face incentives to minimize costs, perhaps to the point of undermining the quality of care, by controlling the overall volume of treatments and reducing the resource intensity of treatments. Hence, program monitoring must focus on quality assurance to guard against undermining the health status of Medicare beneficiaries enrolled in HMO's.

A simple and functional approach to this problem would be to require HMO's to furnish evidence that an acceptable quality assurance system is operational within the HMO. This does not mean that every HMO will have the same system, nor does it mean that every HMO will be providing identical quality of care. Rather, the essential requirement would be to show that each HMO is using a system of quality control that is consistent with the principles and methods of the current state of the art in quality assurance. We suggest the components of an HMO quality assurance system in Figure 1.

To make this approach work effectively, it would be necessary to require that a sample of HMO's participate in a systematic quality assurance monitoring system financed by HCFA. Such a system would assess health status, access, and satisfaction for the eligible population; would evaluate the technical quality of prevention strategies and care of illness episodes; and would employ sampling and statistical methods to the greatest extent feasible. The ultimate evaluation criterion is the overall effect on health status of HMO membership for Medicare beneficiaries. This system should complement the quality assurance systems of individual HMO's, again providing an illustration of how HCFA data needs can stimulate improved HMO performance.

Table 1

Proposed data requirements for health maintenance organizations (HMO's) participating in Medicare

Risk adjustment	
Data collection strategy:	Sample
Unit of observation:	Individual beneficiary
Variables:	Risk-adjustment factors Total annual health care cost
Valuation of the benefit package	
Option 1—adjusted community rate	
Data collection strategy:	Universe of HMO's
Unit of observation:	HMO
Variables:	Adjusted community rate for standardized benefit package
Option 2—market basket	
Data collection strategy:	Sample
Unit of observation:	HMO
Variables:	Prices and quantities of purchased inputs
Program evaluation	
Data collection strategy:	Universe of HMO's
Unit of observation:	HMO
Variables:	Evidence of an acceptable quality assurance system
Data collection strategy:	Sample of beneficiaries in a sample of HMO's
Unit of observation:	Individual beneficiary
Variables:	Health status, satisfaction with care, access, and other pertinent system attributes

To summarize, the data requirements outlined earlier are tailored to the specific needs of HMO's operating under capitation payment for publicly financed beneficiaries. They are summarized in Table 1. As can be seen, these requirements are quite divergent from those required under the FFS system.

Conclusions

New advances in information technology are being continually incorporated into the delivery of health care and the practice of medicine. Many observers anticipate the complete automation of patient medical records and use of large-scale disease-specific data bases to guide clinical practice. These innovations are being adopted by HMO's, and every HMO will probably have some form of automation in its clinical information systems within a decade.

From an HMO perspective, investment in such advances must be supported by increases in the quality and cost-effectiveness of health care from a population-based perspective. This allocation criterion will help in controlling total health care costs. Nevertheless, even if a fully automated HMO could provide utilization and cost data to HCFA at very low marginal cost, the full opportunity cost of maintaining and using such a general purpose data base should be counted. This opportunity cost includes threats to individual confidentiality and organizational competitive positions as well as erroneous and misguided analyses.

However, Medicare data requirements focusing on population health risk factors, annual per capita cost of care, and quality assurance systems within appropriately specified sampling strategies can operate to support efficiency in both the health care delivery system and the payment system. By looking to the future and asking what will help HMO's perform better, HCFA data policies can actually stimulate adoption of appropriate information system technologies. A focus limited solely to HCFA needs is shortsighted and likely to be extremely costly to society in the long run.

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Honeywell Inc.

by Laird L. Miller

Background

As employers invest more and more money purchasing health care services for their employees, they are becoming increasingly interested in evaluating the effectiveness of various vendor programs (e.g., health maintenance organizations, preferred provider organizations, and fee-for-service programs) in meeting corporate health management goals. Many corporations share similar priorities: improving or maintaining the health status of employees and their dependents, reducing risks in home and work environments, and managing health care costs. Likewise, they are requiring vendors to offer evidence that vendor programs are maximizing improvements in employee health and using cost-effective treatment technologies.

Honeywell Corporation, like other private purchasers of health care services, is developing programs and strategies to evaluate vendor services. Honeywell, which comprises diverse business activities in many locations throughout the world, has about 65,000 U.S. employees. The corporate benefits office pays claims through six insurance carriers and also pays premiums to 125 health maintenance organizations (HMO's) and preferred provider organizations (PPO's). The six carriers, which handle fee-for-service claims, administratively cover approximately 75 percent of Honeywell's U.S.-based employees as well as their dependents. HMO's and PPO's enroll the remaining 16,000 employees. Enrollment in HMO's and PPO's is concentrated in the Twin City (Minneapolis-St. Paul) area, where Honeywell's corporate headquarters is located; 13,000 of the 16,000 Honeywell employees enrolled in HMO's and PPO's live in the Twin Cities.

Honeywell's effort to evaluate vendor services began in 1983, when senior management, alarmed by the corporation's rapidly rising health bill, chartered a task force to determine why medical expenditures were increasing so rapidly and to recommend corrective action. Honeywell, which has a self-insured but not self-administered health benefits plan, was experiencing double-digit increases in vendor payments. From 1978 to 1983, payments for health services rose 19 pecent each year, and forecasts indicated that this trend would continue.

The task force determined that the reasons for rising costs were complex and recommended to Honeywell's senior management that four positions be added to design and implement cost-containment strategies. The four positions, three of which eventually became centralized in the Corporate Health and Environmental Resources Department, were in the areas of benefits design, health promotion and wellness, provider relations, and health data management.

The new four-person team set out to establish processes for reducing costs, at the same time improving or maintaining employee and dependent health. First, however, they needed accurate and comprehensive information about how Honeywell employees were using health services and benefits programs and the associated costs of those services.

Honeywell contracted with Health Data Institute (HDI), which analyzed Honeywell's insurance claims data for 1980-82. Information that the Honeywell team sought from the analysis included employee and dependent demographic data, average annual claims expenditures by vendor and location, hospital claims data per vendor, and frequency of surgical procedures by vendor and location. In addition, the team wanted to compare their utilization data with those of other employers. HDI produced 17 reports for the correspondent Honeywell "locations" plus a corporate overview.

Although the HDI reports provided information for the divisions to use in planning benefit designs, promoting health activities, and developing communication with providers and vendor administrators, the HDI analysis showed that little uniformity existed in how the various vendors stored, collected, and reported information. In addition, vendors had interpreted requests for seemingly standard data items in different ways, and some vendors were not able to provide information. Reasons that the vendors gave for not providing data ranged from concerns for confidentiality to inability to obtain the information. Some HMO's, for example, neither "cost out" individual patient services nor identify by employer group patients who receive care. Consequently, these HMO's cannot provide employers with data on claims, billing, and individual patient costs. The insurance carriers had similar problems in providing the requested data items. In summary, then, the HDI analysis affirmed the need for developing an improved system for collecting, analyzing, and reporting Honeywell's health care data.

Health care data needs

As a result of the HDI analysis, the four-person team developed a proposal for an improved Honeywell health care information system. This new system would supply responses to local division management as well as corporate management, fulfilling both their unique and common information needs. The system would modify, but not overhaul, current employee data systems and existing relationships with health care vendors and insurance carriers.

The following is a list of proposed system requirements:

- Both division management and corporate management should be able to use the system.
- Any system measurements should be comparable over time and across population groups. Detailed backup information should be available to support any measurements.
- The system should track corporate-wide trends in cost and vendor utilization.
- System setup and maintenance costs should be reasonable.
- The system must protect the confidentiality of individual health data.
- The system must be compatible with existing and planned data systems, but it also must be flexible enough to allow tracking of other indexes if required.
- The information system must include a method of identifying the company's insured population by location and division as well as by medical plan, age, and sex.
- The information system needs key indicators for summarizing current performance, accompanied by statistics that will permit comparisons. In addition, there must be a method of retrieving detailed information to facilitate investigation and resolution of specific cost or utilization problems.
- The information system must be sufficiently flexible and comprehensive to include fee-for-service indemnity plans, HMO's, and other alternative health care delivery systems.
- The information system should be able to provide summary measurements that can be analyzed by medical plan groups within and across divisions.

These summary measurements include the following:

Summary utilization indicators

- Inpatient days per 1,000 covered population per year (age and sex adjusted).
- Inpatient admissions per 1,000 covered population per year (age and sex adjusted).
- Average length of stay per inpatient admission by major service category: medicine, surgery, maternity, psychiatry, chemical dependency, rehabilitation.
- Number of surgical procedures performed per 1,000 covered population per year (age and sex adjusted).
- Number of outpatient encounters per person per year.

Sample quality indicators

- Mortality rates per 1,000 covered population (age and sex adjusted).
- Mortality rates per 1,000 admissions (case-mix adjusted).
- Readmission rates per year.
- Proportion of Cesarean sections among live births.
- Proportion of hysterectomies in women under age 35.
- Frequency, by provider, of patients staying more than two times the average length of stay for a diagnostic group.

Summary cost indicators

- Total premiums paid.
- Average premium paid per employee.
- Total charges.
- Average charge per claim.
- Total claims paid.
- Average claim paid.
- Total hospital inpatient room and board charges.
- Total hospital ancillary charges.
- Total surgical claims paid.
- Total outpatient claims paid.

Detailed report components

- Diagnosis- and procedure-specific information by the 25 most frequently occurring groups.
- Provider-specific (facility and physician) information for any provider with 10 or more patients.

- Demographic-specific information, i.e., age, sex, employee, dependent, spouse, retiree group.
- Information on salary/hourly groups.

In July 1984, the team issued an update on the current information system. None of the proposed changes had yet been implemented. The purpose of this report was to pinpoint problems and to suggest resolutions to these problems.

At the time of the report, patient eligibility for health care benefits was generally determined from the payroll system. Patient eligibility data were updated only when the employee changed medical plans. The eligibility payroll data base described only whether the employee had family or single coverage. Eligible dependents were not listed, nor were any demographic factors identified. Moreover, additional problems were found. Division identification and employee geographic location were not always accurate, and historical plan information was not recorded. For example, no records were kept when an employee switched plans or added dependent coverage.

The quality of utilization data varied by carrier. For example, five of the six insurance carriers did not record employee use of emergency room or intensive care unit services. Some carriers indicated only their own diagnostic or procedure codes; others did not indicate any diagnostic or procedure code. Most insurance carriers did not include detailed outpatient information, name of the hospital, physician charges, or any identifier for the attending physician. Two insurance carriers did not maintain records of when the employee received treatment. HMO utilization data were similarly nonexistent, and in the majority of cases it was impossible to extract meaningful comparisons either across HMO's or between HMO's and fee-for-service carriers.

Given the quality of available data, collecting uniform comparable utilization data from HMO's, PPO's, and insurance carriers was proving to be a challenge. Other employers in the Twin Cities were experiencing similar difficulties. As a result, Honeywell and other employer representatives active in the Minnesota Coalition on Health Care Costs formed a subcommittee that included HMO representatives. The purpose of the subcommittee was to develop an HMO data set for use throughout the HMO community. A summary of the data set follows this section.[1] Honeywell and other participating employers will require that HMO's report the requested information on HMO participants as a condition of doing business. Similar initiatives focusing on obtaining the same data from insurance carriers are also planned.

On a national level, Group Health Association of America is working with member plans and with industry representatives like Honeywell to develop uniform reporting requirements. One model that Group Health Association of America is evaluating is the Minnesota Coalition's data set.

Summary of data set

The data set includes both company-specific and aggregate information on employees and their dependents in the following areas.

- Membership:
  Membership by age and sex.
  Member months.
  Number of single and family contracts.
  Average family size.
- Hospitalization:
  Admissions, days, and average length of stay for medical, surgical, obstetrical, chemical dependency, and extended care diagnoses and for all diagnoses.
  Obstetrical admissions by type of procedure.
- Hospital outpatient services:
  Emergency room treatment—adult or pediatric.
  Type of service.
- Other outpatient services:
  Adult or pediatric.
  Type of service.
- Clinical/medical center services:
  Adult or pediatric.
  Type of service.
- Outpatient mental health and chemical dependency services:
  Individual or group/family session.
- Private-duty nursing visits.
- Prescriptions.

Change in focus

As Honeywell's corporate team worked to collect utilization data and to contain health care costs, they realized that their ultimate goals could be realized in the long term only by managing health. Their emphasis evolved, therefore, from managing health care costs to managing health.

Corporate goals of improving health, reducing risks, and cost containment are now being worked from a different angle. Honeywell is focusing on identifying risks, personal and environmental, that will affect health negatively in the present and in the future. Honeywell feels that the ultimate way to manage costs is to prevent problems from occurring through early identification and evaluation of personal risks, workplace hazards, environmental and community health problems.

This effort, of course, requires an information system that goes beyond just collecting health care utilization data. The Honeywell information system will identify population risk factors and establish normative data. It will help divisions and subsidiaries to eliminate risks. It will also help location medical departments to put treatment plans together and to better manage cases. In this model, Honeywell shares with medical providers and employees the responsibility for managing problems associated with ill health and for returning the employee to healthy or appropriate status as soon as possible.

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[1] A complete copy of the data set is available from the Minnesota Coalition on Health Care Costs, Suite 440, Health Associations Center, 2221 University Avenue, SE., Minneapolis, Minn. 55414.

The following is a list of some examples of the data that the system will collect and how the data will be used:

Occupational health and safety

Data to be collected—Health outcomes from claims; location and job code data for individual employees; exposure data; biomechanical risk data sorted by job code; program participation records.

Data will be used to—Track experience from risk exposures through to medical care events and costs; track performance of identified groups before and after occupational health and safety programs; and compare local results with those of similar groups not involved in control efforts.

Environmental affairs

Data to be collected—Facilities profile, including chemicals inventory; cost per spill data; facility replacement cost data.

Data will be used to—Monitor regularly scheduled facility inspections by chemical type; develop location environmental risk reports; and project future costs under a variety of environmental control scenarios.

As employers' programs evolve from a focus on health care cost containment to a focus on health management, it will be necessary for their data capabilities to evolve into integrated health management information systems. However, prior to developing such capabilities, we must evaluate our informational needs, answering such questions as:

- What are our health management goals?
- Will our programs help us meet the goals?
- What data do we need to evaluate the programs?
- What will we do with the data?
- Why are the data important?

This can be done effectively only after we have defined our roles and responsibilities in corporate health management.

Consumer information needs in a competitive health care environment

by Theresa Varner and Jack Christy

The role of information in facilitating choice in a competitive health care marketplace is clearly pivotal, but it is also complex and occasionally problematic. Although it is clear that information is critical to the competitive approach, less clear is the relationship between the availability of appropriate information and the exercise of informed choice, a relationship that is obscured in the tangle of influences that affect the use and delivery of medical care. Nonetheless, the centralized and standardized collection, review, and dissemination of relevant health care data remain the keys to predicting—and avoiding—adverse outcomes in the development of health care policy.

Introduction

In recent years, growing concern over rising health care costs has led to the exploration of a variety of options—both regulatory and market-oriented—to control spending for health care. Increasingly, though, in both the public and private sectors, confidence seems to be growing in the ability of the competitive approach to restrain health care costs by changing those incentives to which consumers and providers of medical care typically respond. Under the ideal competitive model, consumers, sensitive to the financial consequences of their use of medical services, seek out less-expensive health plans that have been created in response to altered consumer demand. The role of information in facilitating choice in such a system is clearly pivotal, but it is also complex and occasionally problematic.

Over the past few years, Congress and the Administration have demonstrated an interest in the competitive approach to the delivery of health care services to older Americans. This commitment is particularly reflected in the health maintenance organization (HMO) provisions of the Tax Equity and Fiscal Responsibility Act (TEFRA) of 1982, which encouraged the enrollment of Medicare beneficiaries in prepaid capitated health plans under at-risk contracts with the Health Care Financing Administration (HCFA). Further, the Administration has expressed interest in the concept of geographic capitation and in Medicare vouchers.

Its supporters claim that a prepaid capitated approach to health care delivery holds the potential to reduce costs to both Medicare beneficiaries and the program itself, to expand services through creative restructuring of benefit design, and even to improve quality of care. But both detractors and supporters would agree that the success or failure of any competitive model is linked in large part to the principle of informed consumer choice, a principle that is predicated on the availability of sound, comprehensive, and comparative data.

If the availability of such data represents a necessary condition for meaningful competition in the health care system, it does not constitute a sufficient one. The health care marketplace is enormously complex, responding (occasionally in paradoxical ways) to subtle, and sometimes indistinguishable, technical, economic, political, cultural, and demographic influences. Nevertheless, the systematic collection, processing, and dissemination of relevant health care data facilitate informed choice in the marketplace and protects the public directly by providing consumers with specific information on medical system costs, services, operations, and quality. It also represents an important tool that can be used by policymakers to evaluate the strengths, weaknesses, and limitations of prepaid capitation approaches. With the availability of such data, decisions governing both individual beneficiary behavior and the development of public policy can be based on information and analysis, not intuition or ideology.

Competition and a changing health care system

Over the past several years, health care costs and prices have risen at rates that have far outpaced the rate of general inflation; rates of growth in the Medicare program have historically been even higher than those in the larger health care sector. Although increases in health care spending in 1984 and 1985 fell below 10 percent, recent figures from the Consumer Price Index (CPI) for 1985 and 1986 would suggest that the battle to contain health care costs is by no means won. In 1985, when the general inflation rate was 3.7 percent, medical care prices rose by 6.2 percent. The gap is expected to be even wider in 1986. The sense of urgency that continues to pervade the cost-containment effort is heightened by a growing awareness of the inevitable increase in consumption of health resources by an aging population. Somehow the dilemma that exists between dwindling resources and growing—and sometimes conflicting—demands on those resources must be resolved.

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It is this environment of fiscal austerity and raised consciousness about health care costs that has spawned explicit and dramatic cost-containment efforts such as the Medicare hospital prospective payment system (PPS) and the physician fee freeze. But increasingly the Administration is looking to the marketplace as the most appropriate arena for controlling health care costs. This approach calls for the introduction of "proper" incentives in the delivery and purchase of medical services—incentives to the consumer to use only necessary services delivered by efficient providers and incentives to providers to deliver cost-efficient services. Such market-based reforms are intended to correct the excesses of traditional cost-based reimbursement practices. Of particular interest to the Administration is the prepaid capitation model, which involves prospective reimbursement to health maintenance organizations (HMO's) under risk-sharing contracts with HCFA at a rate equal to 95 percent of the adjusted average per capita cost (AAPCC). The AAPCC is the estimated average per capita amount that Medicare would otherwise pay for medical services provided to beneficiaries in the local fee-for-service market. The AAPCC is adjusted for age, sex, welfare status, and institutional status; it is not adjusted for health status.

The prepaid capitation model appears to represent a useful tool in the public effort to restrain medical cost increases. But it is not without its problems. Health economists who have commented recently on the capitated approach suggest that the claims about its putative success in reducing costs, particularly through reduction in hospital admissions, are possibly exaggerated or premature (Merrill and McLaughlin, 1986; Luft, Maerki, and Trauner, 1986; Johnson and Aquilina, 1986; Feldman et al., 1986). Concerns about adverse selection, enrollment/disenrollment practices, marketing and advertising abuses, government overpayments, the provision of care to the frail elderly and to the indigent, premium and capitated payment calculations, and underutilization of services are widespread.

In theory, the availability of information—the enabler of informed consumer choice—could act to correct some of the problems or potential problems that have been identified under a capitated approach. In any event, the primary function of consumer information is to protect consumers and to guide them in effective use of the health care system. But even those who recognize the pivotal role of information in a competitive medical environment believe that the standard competitive model ignores the uniqueness of the health care industry; i.e., it ignores the unique nature of the medical "product" and the relationship between the provider of medical services and consumers of those services.

Moreover, it is naive to expect uniformly judicious decisions by consumers of medical care, even though they may share similar medical conditions and access to the same information about treatment options. The complexity of medical data alone invites a variety of responses to an identical set of relevant facts. And that inherent complexity is confounded by the intensely personal and usually collaborative nature of the medical decision itself, a decision frequently made under stress and carrying possibly profound implications for the patient. The selection of one course of action over another, springing as it does from a variety of considerations, may not always be predictable or even apparent; nevertheless, this cannot be used to rationalize the withholding of critical information from consumers.

Burton Weisbrod (1983) contends that the health industry is *not* unique, but that "it has characteristics that make inappropriate certain assumptions—such as that of well-informed consumers—and that therefore raise doubts about the economic consequences of increased competition." Weisbrod points out that in negotiating the health care delivery system: (1) "the consumer is not purchasing a standardized commodity consumed under standardized conditions; so learning from experience is more complex"; (2) the consumer is often unable to judge "the 'counterfactual'—what would happen if the consumer did not obtain the care compared with what would happen if he or she did obtain it. . ."; (3) consumers are likely to turn to "agents" for guidance in making health care decisions, in a sense relinquishing their decisionmaking authority to "sellers" of medical services who may be better informed than "buyers" of those services (a phenomenon that Weisbrod characterizes as "informational asymmetry"); and (4) physician-agents may be placed in a "position of dual and conflicting responsibility. . . ." Weisbrod concludes that despite the presence of "mechanisms for coping with informational asymmetries in health care, even quite sophisticated consumers are often poorly informed about options that are important to them."

Weisbrod's observations are troubling, for they call into question the fundamental premise on which the competitive approach is based, i.e., that informed consumer choice is not only necessary but achievable. His caveats should not deter us, however, from the goal of designing an appropriate information system, but rather should alert us to the special requirements of that system. For if we can expect any positive economic consequences from increased competition in the health care marketplace, they must be rooted in informed consumer choice. Without adequate information to guide consumers in their assessment of medical plan options, they are participating in a game that deprives them of access to its rules. Thus, consumer participation may be random or irrational. And without adequate information, the public policymaker may pursue a policy course whose implications for the delivery of adequate, appropriate, and cost-effective medical care are unforeseeable, especially for the long term.

Information system characteristics

At least in theory, one of the exciting features of a health care system in transition, especially one headed in the direction of market-based reform and increased competition, is that it tends to encourage experimentation and innovation. Presumably, in a competitive environment, traditional providers of health care, health insurers, and alternative delivery entities vie with one another for the enrollment of consumers in their medical plans. The process by which providers and insurers attempt to attract potential enrollees supposedly spawns the development of new and enhanced benefit packages carrying lower out-of-pocket costs. Thus is the health care landscape dotted with the confusing acronymic byproducts of competition—HMO's, CMP's (competitive medical plans), IPA's (independent practice associations), PPO's (preferred provider organizations), SHMO's (social health maintenance organizations), etc.

Further, as Ginsburg and Hackbarth (1986) have pointed out, with the shift of financial risk from the Federal Government to private health plans under prepaid capitated contracts comes a parallel shift in the locus of responsibility for making decisions about the spending of health care dollars and the allocation of medical resources. "The essence of the ADS (alternative delivery system) approach," they say, "is to decentralize those complicated and often subjective decisions." Ginsburg and Hackbarth favor this decentralization from the Federal Government to private health plans because, in their view, it offers greater flexibility and protection to physicians and patients.

In a competitive system, however, the proliferation of health delivery plans and the decentralization of responsibility for decisionmaking about medical practice and provider payment create special problems for an emerging but still inchoate data collection system. For example, it is the availability of standardized health care use and expenditure data that has enabled Medicare to develop risk contracts with HMO's and thus participate in the current competitive environment. For the population under 65 years of age, however, uniform health care use, expenditure, and quality data do not exist. Thus, the ability of consumers to manipulate a competitive marketplace to their advantage is critically impaired.

What is required—now more than ever before—is the collection of uniform and comprehensive health service delivery data, using standardized instruments covering a broad spectrum of relevant health care information. It makes little sense to collect information if it does not permit us to compare and contrast health care providers and plans. Further, the data collected must be systematically processed and analyzed and presented in a form that is intelligible and meaningful to consumers and policymakers.

Responsibility for such data collection, processing, and dissemination appropriately resides with the Federal Government. Working with providers and consumers, the Federal Government must exercise its authority to define the necessary elements of such an information system and require its use throughout the country. In addition, the Federal Government must coordinate data collection and must monitor the methodology used in the data collection process to ensure uniform reporting.

In the past, HCFA has funded various beneficiary-awareness projects. One such project is HealthChoice in Portland, Oregon, a health brokerage program designed to inform Medicare beneficiaries about their health care options and to enroll them in alternative health care plans. Similarly, the American Association of Retired Persons publishes a consumer's guide to HMO's and has operated a HCFA-funded beneficiary-awareness project, The HMO Informed Buyer. The latter made use of older volunteers to educate the public about HMO's and to influence the way in which HMO's deliver medical services. Because the health care brokerage and beneficiary education projects are of undeniable benefit to consumers, it is imperative that funding for such programs be stable and reliable.

It is sometimes suggested that consumers may be overwhelmed by the sheer volume of health care information available to them. Deregulation of the telephone industry was expected to yield cost savings as corporate competitors lowered prices to attract customers. A byproduct of this competitive environment has been the proliferation of confusing and noncomparative data that has frustrated even the most ardent of prudent consumers. But the problems associated with information overload in the telephone industry should not be used to justify restrictions on consumer information in the medical marketplace. Rather, they should be seen as clear evidence of the need for centralized and standardized data collection, processing, and dissemination.

The design of such an information system lies beyond the scope of this article. At a minimum, however, the system must address: (1) coverage issues; (2) cost and financing issues; (3) administrative and operational issues; and (4) quality of care issues. The types of information that might be subsumed under each one of these issue areas are discussed below.

Coverage

HMO's have the discretion to add services beyond those covered by Medicare and to price their benefits package accordingly. HMO's also have an obligation to return to the beneficiary—either through additional benefits, reduced premiums, or a combination of the two—the difference between Medicare's prospective payment and the actual cost to the HMO of providing services under the capitation contract. Consequently, there is great diversity among HMO's in terms of plan benefits. Complete information regarding the range of additional services should be collected.

To facilitate comparison, data on plan benefits should be reported on a uniform grid. The grid should include the broad range of services needed by older consumers, and HMO's should be required to indicate those services covered and those excluded under their plans. It is recommended that the uniform data collection instrument include at least the following categories:

- Hospital care.
- Physician services.
- Home health care.
- Homemaker and personal care services.
- Dentures, crowns, bridges.
- Mental health services.
- Medical and psychiatric care for patients with Alzheimer's disease.
- Routine physical, vision, and hearing examinations.
- Routine dental services.
- Health promotion/wellness programs.
- Prescription drugs.
- Eyeglasses.
- Hearing aids.
- Skilled or intermediate level nursing care.
- Routine and nonroutine foot care.
- Chiropractic services.
- Nutrition services.
- Transportation services.
- Hospice services.

If specific services are available through the HMO but not provided for Medicare beneficiaries, it is important to know whether, and under what circumstances, Medicare beneficiaries may use those services on a fee-for-service basis.

The lock-in provisions of the HMO should be clearly delineated, as should regulations governing the use of out-of-plan services. The data collection instrument should also be capable of determining the portability of the HMO benefit. Information on benefit portability should specify the financial consequences to the enrollee who uses out-of-plan services or emergency services outside the service area of the HMO.

Administration and operation

Disclosure statements and HMO comparative information should identify whether the HMO is a publicly held corporation, a private investor-owned corporation, or a nonprofit corporation. Because the issue of portability of HMO coverage is important to older consumers, information about the relationship of the HMO to a larger network (e.g., HMO-U.S.A., Kaiser-Permanente Health Plan, etc.) would be helpful. Data covering the composition of the Board of Directors should also be gathered.

HMO data collection materials should include information about the structure of the HMO (e.g., staff, group, network, or IPA) and the nature of HMO subcontracts for specialty care, home health services, hospice care, and other support services. Information on the nature of subcontracts should indicate which department in the HMO is responsible for controlling payment for subcontracted services. (For example, an HMO structure requiring that the primary care physicians pay the bills for specialty referrals or home health services from their capitated monthly allowance invites underuse of services).

Data collection instruments should be able to assess the degree to which the HMO promotes member participation in decisions about policies and procedures. Information gathered should include member participation in the election of the HMO Board of Directors, the existence of a Medicare advisory council or senior caucus, and/or the presence of a Medicare beneficiary ombudsman within the member services department.

Consumers are entitled to know the provisions the HMO has for member protection should the HMO face insolvency. Because Federal regulations allow a federally qualified HMO to demonstrate insolvency protections through a variety of means, it would be useful to know whether the HMO protects members against insolvency damages through hold-harmless provisions in agreements with hospitals and physicians, bonds or guarantees, or restricted reserves. Such information needs to be presented in language understandable to a lay reader.

There must be prompt public disclosure of any corrective actions ordered by the Federal Office of Prepaid Health Care or State Insurance Department, if financial reviews reveal a negative net worth or the inability of an HMO to maintain its financial projections.

Data collected from HMO's should provide complete information on enrollment and disenrollment practices. Further, data gathered should indicate whether the HMO is newly organized or well established. Disclosure data should include information about membership size, the number/percent of Medicare members, and the number/percent of Medicare members the HMO aims to enroll. Data collected should also include demographic breakdowns of the member population.

Disenrollment data can be useful as an indication of member satisfaction; results from formal member satisfaction surveys should also be available to members and potential members.

Costs and financing

HMO data collection should include the monthly premium for membership in the HMO (or premiums, if the entity offers both low- and high-option plans); that portion of the premium used to finance additional benefits should be so indicated.

HMO comparative material should also provide the current county per capita cost set by HCFA for the counties making up the HMO service areas, as well as historical increases or decreases since the HMO's entered into prepaid at-risk contracts with HCFA. Beneficiaries are entitled to know what the Federal Government has decided is an appropriate per capita payment for their care.

Information gathered on the financing of the basic Medicare benefit and any supplemental benefits should indicate deductible and coinsurance requirements.

Since, by law, savings accruing from differences between the AAPCC and the premium charged by the

HMO must be returned to Medicare beneficiaries, it is important that the form in which such savings are recast be explicitly stated. Has the HMO historically used the savings differential to: (1) reduce the HMO premium or reduce or eliminate deductibles and coinsurance; (2) offer supplemental services; (3) accept lower payments from HCFA; or (4) offer a combination of these approaches? What HMO policies govern the disposition of savings?

HMO comparative data should reflect the relationship between the total revenues of an HMO and its total expenditures; that is, they should provide a uniform indication of the existence of plan surpluses and deficits, both currently and over time.

Quality

The need for consumer information on quality of care in a capitated system is a major issue for consumers because of the negative incentives inherent in such a system to skimp on care. Clearly linked to issues of quality care in a capitated system are issues of quality service. If consumers find it difficult to reach a doctor by telephone, to secure an appointment to see a doctor, or to have elective surgery, then quality-of-service issues quickly merge with quality-of-care concerns.

The availability of comparative medical outcome data for capitated entities is critical to an evaluation of the ability of an HMO to provide quality care to its members. Such outcome data should include mortality and morbidity rates adjusted for age, sex, and case mix.

Data should be gathered on hospitals affiliated with the HMO. Is the affiliated hospital accredited? What is its range of services? What is its age/sex/case-mix-adjusted mortality rate? What is its nosocomial infection rate? Full explanatory material and interpretive aids must accompany such data to ensure their proper use.

Information gathered on the service delivery plan of an HMO should address the qualifications of the medical staff. Are physicians board-certified or board-eligible in their specialities? Is there a program of continuing medical education? What is the ratio of staff to patients by professional category? What use is made of the services of nonphysicians, e.g., registered nurses, physician assistants, nurse practitioners, etc., and under what circumstances?

An HMO comparative data base should incorporate various medical care use rates. These should include hospital admission rates (physician- and HMO-specific), referral rates, total days of hospital care, procedural volume, and average length of stay. Group-specific as well as aggregate data would be helpful, and disaggregation by diagnostic group is desirable.

Data should be collected on the process by which quality care is ensured within the HMO and by which beneficiaries can appeal decisions affecting their medical treatment. The design of the in-house quality assurance program, including the peer review process and provisions for external review of medical records, should be described. So should the formal grievance system by means of which beneficiaries can appeal health care decisions with which they take issue. Complaint rates and general disposition data should also be collected.

A range of access issues should be covered in the data collection process. What provisions are made for emergency and after-hour care? What is the mechanism for referrals to plan and out-of-plan specialists? What is the mechanism for obtaining second opinions? What is the standard waiting time to secure a routine appointment? What is the average lag between the appointment time and the actual appointment? What is the typical length of encounter with physicians and other medical professionals? What provisions are made for ensuring continuity of care within the system?

HMO's should be required to disclose annual information about the number of physicians affiliated with the HMO and the number who left the HMO during the previous year for reasons other than retirement. Other useful information, in addition to requirements of the HMO for board certification of its physicians, would include the results of reviews of Board of Medicine records for disciplinary actions or complaints, and reviews for medical malpractice judgments.

Conclusion

It is appealing to believe that if we can create the proper climate for competition, market forces will control health care costs with little or no regulatory "interference." Certainly, the Administration's confidence in market reforms is reflected in its commitment to a capitated approach in meeting the health care needs of older Americans. But in attempting to alter the incentives to which consumers and providers respond, we should remember that the health care marketplace has proven to be resistant to the normal forces of supply and demand. A host of confusing and interdependent factors may intervene between the perception of need for a medical service and the delivery of that service.

Too, while it is clear that information is critical to the competitive approach, less clear is the relationship between the availability of appropriate information and the exercise of informed choice in the tangle of influences that affect the use and delivery of medical care. The relationship is further clouded by the simultaneous development of an array of new alternative delivery systems and the incorporation of those delivery systems into giant monolithic units through the mechanisms of vertical and horizontal integration, merger, and consolidation.

Finally, we must remember that the commitment to the capitated approach has its impetus in the need to control costs. But actions to control costs may not always be compatible with the delivery of quality medical care. We must ensure that quality of care is more than a subsidiary concern.

The centralized and standardized collection, review, and dissemination of data from existing capitated models remain the key to predicting—and avoiding—adverse outcomes in the development of health care policy. Before we proceed, then, down that Panglossian road to the world of capitation, we would be well advised to consider carefully the implications of our actions for the contract between society and its aging members.

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Managed competition in health care and the unfinished agenda

by Alain C. Enthoven

A market made up of health care financing and delivery plans and individual consumers, without a carefully drawn set of rules to mitigate market failures, and without mediation by collective action on the demand side, cannot produce efficiency and equity. The concept of competition that can achieve these goals, at least to a satisfactory approximation, is managed competition, with intelligent active agents on the demand side, called sponsors, that contract with the competing health care plans and continuously structure and adjust the market to overcome its tendencies to failure. A great deal remains to be done to achieve the goals envisioned by the "procompetition reformers."

Introduction

Many people have contributed to the movement for a competitive health care financing and delivery system, as an alternative to the system of "guild free choice" that was created and enforced by organized medicine (Weller, 1984). (Under guild free choice, every insurance plan was required to leave the patient at all times free in choice of provider; every doctor was able to participate in every financing plan on equal terms. The purpose and the effect was to assure that there would be no cost consciousness on the demand side of the market for health services.) The pioneers of the prepaid group practice movement introduced the concept of the "limited provider" or "closed panel" plan as a significant competing alternative. They overcame the opposition of organized medicine and proved the acceptability of prepaid group practice and its economic superiority over insured fee-for-service with "free choice of provider." They successfully advocated dual or multiple choice of limited provider health plan as an alternative to guild free choice. Their success and efforts helped persuade the U.S. Congress to adopt a competitive multiple choice model for the Federal Employees' Health Benefits Program (FEHBP) in 1959.

These practical achievements, which were of fundamental importance, came to be reflected in the writings of scholars and public policy analysts. In 1970, Ellwood, McClure, and their associates proposed a national "health maintenance strategy" that would deal with the crisis in health care cost and distribution by promoting "a health maintenance industry that is largely self-regulatory" (Ellwood et al., 1971). Their work led directly to the Health Maintenance Organization (HMO) Act of 1973, a major procompetitive step. In 1972 and 1973, while serving in the Nixon Administration, Fleming designed and recommended a proposal for national health insurance that he called "Structured Competition Within the Private Sector" (Fleming, 1973). His proposal emphasized practical ways of extending the successful experience of the FEHBP to the whole population. In 1977, I designed and recommended Consumer Choice Health Plan (CCHP), "a national health insurance proposal based on regulated competition in the private sector," to the Carter Administration (Enthoven, 1977 and 1978). CCHP built on Ellwood, McClure, and Fleming's ideas and added design proposals to deal with such issues as financing, biased selection, market segmentation, information costs, and equity. Havighurst (1978) attacked "professional restraints on innovation in health care financing" from the perspective of antitrust law. By the end of the 1970's, the idea of a price-competitive health care economy had attained intellectual respectability and a significant following in Congress.

This article responds to an invitation to appraise subsequent developments from the point of view of the competition idea. Clearly a great deal has changed in recent years. The increase in HMO membership accelerated and reached 21 million by the end of 1985, up 26 percent from a year earlier (InterStudy, 1986). Preferred provider insurance (PPI) has grown explosively as traditional insurers have taken advantage of legislative changes and a buyers' market to discount prices and establish effective utilization controls. By the summer of 1986, the number of persons covered by PPI probably exceeded 10 million. Guild free choice is breaking down. Selective purchasing of services by competitive medical plans (CMP's) appears well on its way to becoming the dominant form of purchasing of health care. (Ellwood's phrase "competitive medical plan" is now a legal term for a health care financing and delivery organization that meets certain HMO-like criteria defined in Section 1876 of the Social Security Act. However, I use it here in its original sense as a generic term for HMO's, PPI, and similar concepts that link premiums and the ability of a limited set of contracting providers to control cost.)

Of course, the health care system is being buffeted by some large forces that exist independently of competition. Public finances are strained. The voters have overwhelmingly opposed increased taxes. The reductions in defense spending as a share of gross national product (GNP) that freed resources for health care in the 1970's are no longer possible. So governments have been making fundamental changes in the rules of the game in order to gain freedom to

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cut health care outlays. The number of physicians per capita has increased substantially in the past decade. Short-stay hospital beds are in excess supply. Employers and consumers were aroused by the increase in health care costs, and they have become better informed and tougher purchasers. So major changes would have occurred even in the absence of competition. And these changes are motivating and facilitating the transition to a competitive system. However, while a competitive health care economy appears to be coming fast, it has not yet arrived.

Need for managed competition

Many proponents and critics of the competition idea share the misconception that "competition" means a market made up of health care financing and delivery plans on the supply side and individual consumers on the demand side, without a carefully drawn set of rules designed to mitigate the effects of the market failures endemic to health care financing and delivery, and without mediation by some form of collective action on the demand side. Such a market does not work. It cannot produce efficiency and equity. Health insurance and health care markets are not naturally competitive. Health insurance markets are vulnerable to many failures that result from attempts by insurers to select risks, segment markets, and protect themselves from "free riders."

The concept of competition that can achieve efficiency and equity, at least to a satisfactory degree, and that the procompetition reformers recommend, may be clarified by contrasting it with several concepts that do not work. For reasons I will explain, a free market in which health plans compete without rules to serve indiviudal consumers cannot work. Vouchers alone—giving people certificates worth so much money and letting them go out and shop for health insurance in a free market—cannot solve the problems.

Experience has shown that even Fleming's "structured competition" and my "regulated competition" do not quite describe the practical successes we have seen nor what is needed to achieve efficiency and equity in health care financing and delivery. Both terms have been taken to suggest that the intent was to structure the market by a set of rules laid down once and for all. Whatever set of rules one proposes, critics can always dream up ways that health plans might get around them to their advantage. The critics hypothesized a contest between intelligent, adaptive health care plans and a rigid, unchanging set of rules—an unequal contest at best. As they identified actual or hypothetical problems, I would often reply, "I think that problem could be managed using the folowing tools . . . . " This has led me to believe that a more accurate characterization of what actually works would be managed competition.

Managed competition must involve intelligent, active agents on the demand side, contracting with health care plans and continuously structuring and adjusting the market to overcome attempts to avoid price competition. I call these agents "sponsors"; they play a central role in managed competition. A sponsor is an agency that assures the members of a defined population group of the opportunity to buy health care coverage. The sponsor contracts with health plans concerning benefits covered, prices, enrollment procedures, and other conditions of participation. The sponsor also subsidizes the beneficiaries' purchases to discourage free riders and to achieve equity. Sponsors may be public or private. Their behavior is influenced by laws and public subsidies. The main sponsors in our society are employers, unions, health and welfare trusts, and government agencies. The Health Care Financing Administration (HCFA) is the sponsor for Medicare beneficiaries. Managed competition also connotes the ability to use judgment to achieve goals in the face of uncertainty, to be able to negotiate, and to make decisions on the basis of imperfect information. It takes more than mere passive administration of rules to make this market work.

Unfinished business

With only about 30 million Americans, or 13 percent of the population, in some sort of competitive medical plan, one can hardly say that price competition is today the dominant mode of economic organization. A great deal remains to be done to achieve the goals envisioned by the procompetition reformers. Roughly 30 million Americans or more lack coverage. There is a need for sponsors for the unsponsored as well as a need for an equitable system of subsidies for everyone's insurance. Though this is changing, many Americans still remain under employer-pay-all arrangements—despite a need for cost-conscious demand. PPI is a useful transition device, but it is not much more than a price-discount arrangement. For potential economies to be achieved, there is a need for more cohesive organized systems of care. It is also necessary to develop high-quality, cost-effective medical practice, good models of adaptation to competitive markets by academic medical centers, and a means of efficient transition to a long-term balance of supply and demand in the markets for physicians and hospital services. I develop these points in the second half of this article.

This article has implications for management in both the public and private sectors. Perhaps the most important implication for the public sector is that the role of HCFA needs to be recast from that of administrator of an insurance entitlement program to that of sponsor using competition to achieve the maximum benefit for Medicare beneficiaries. The main implication for private sector sponsors is that, if they want to use competition to achieve greater benefits or lower costs for their sponsored groups, their job is more dynamic and complex than many have understood. Employers cannot remain passive and expect competition to work magic for them without some intelligent effort on their part.

To some readers, what I have written here may appear as a major change in views, even a repudiation of the competition idea as they understand it. That would not be a correct impression. I still believe in the same principles that formed the basis for Consumer Choice Health Plan and the competition strategy. However, circumstances have changed. And there has been a great deal of research, debate, and discussion since 1977. I now see much more clearly than in 1977 the need for an active and extensive role for sponsors as an essential part of a successful competition strategy. I see this article primarily as a needed clarification of what I wrote in the 1970's. Now, as then, I see competition as a strategy to use market forces to reform the delivery system to make it produce good-quality, cost-effective care for all. I do not see it as a detailed, unchanging blueprint.

Managed competition

Market failure

In a free market made up of CMP's on the supply side and individual consumers on the demand side, without carefully drawn rules and without sponsors, the health care plans would be free to pursue profits or survival using numerous competitive strategies that would destroy efficiency and equity and that individual consumers would be powerless to counteract. These strategies would include risk selection, segmentation, product differentiation that raises information costs, discontinuity in coverage, refusals to insure certain individuals, biased information regarding coverage and quality, and erection of entry barriers. The main evidence that this would happen is the parlous state of the great majority of unsponsored people in our health care economy.

But experience with successful models of competition suggests that tools are available to enable sponsors to use competition to achieve a reasonable degree of efficiency and equity for their sponsored populations. Most of these tools are expressed in contracts between the sponsor and the health plans. One purpose of the contracts is to structure the competition to make it work.

For the most part, we do not have free markets in health insurance in the United States. Our health care financing system is largely made up of government-sponsored programs, such as Medicare and Medicaid, and tax-subsidized, employer-sponsored health insurance in both the public and private sectors. This insurance is subject to various laws and regulations, such as the continuity-of-coverage provisions recently added to the tax code.

In this section, I enumerate the major market failures that would be likely to occur in a free market, or even a regulated market made up of health plans and unsponsored individuals. In each case, I briefly explain the problem and indicate some of the tools available to sponsors to correct it. In some cases, use of these tools involves limiting consumers' choices. Tradeoffs have to be made. We must give up competition and choice in some dimensions in order to achieve more effective competition in other dimensions. I do not believe we can achieve anything like perfect competition. But successful experiences to date suggest that our society should be able to achieve a satisfactory workable competition with results superior to those in any other existing model.

Risk selection

The most prominent feature of markets for health care coverage in which individuals have a choice of plan is that health risks or expected medical costs may be distributed unevenly among the different plans (biased selection), and achievement of a favorable selection may be very advantageous to an insurer. Biased selection may result from insurer action, consumer action, or the interaction of the two as insurers manipulate consumers' choices.

If an insurer must quote one premium to all members of a group, and if it can influence the composition of the group, the insurer will find it advantageous to exclude people with relatively high expected costs from that group. This will permit it to make a greater profit or to offer a lower price, if there is competition. Many techniques exist for doing this, including medical review of applicants for coverage and refusal to cover people with serious health problems, exclusion or limitation of coverage of care for preexisting conditions, underwriting criteria, and manipulation of the coverage to induce the good and bad risks to identify themselves by the coverage they choose. Newhouse and others have hypothesized that discrimination against the sick by underservice and by pressure to disenroll is the likely consequence (Newhouse, 1982).

In extreme cases, this may lead to cancellation of coverage or refusal to renew a policy, producing widespread lack of coverage, concentrated among many of the people who need coverage most. Many people will perceive such outcomes as unjust, for example, to the widow who has had cancer and who depended on her husband's employment group for coverage.

If not constrained to insure a whole group for the same premium, insurers and insureds may seek to subdivide each group into subgroups with higher and lower costs and to charge separate premiums to each subgroup. Or a different insurer might contract with each subgroup. This could theoretically lead to complete segmentation of the market to the level of individual risks (Rothschild and Stiglitz, 1976; Pauly, 1984). One problem here would be inequity. In the absence of action to the contrary, the sick would pay the full expected costs of their care.

Insureds may know more about their expected medical needs than insurers, even if the latter have access to medical records. So the insurers seek to induce those who expect greater medical needs to identify themselves by selecting lower rather than higher deductibles; the insurers then charge a higher premium for the low-deductible coverage. The out-of-pocket outlays of the sick may be raised far above those of the well. A competition in raising deductibles to attract better risks might ensue, and many might be unable to buy the insurance coverage they would choose to buy if they could get it at an actuarially fair price.

How this all plays out would depend on specific rules, if any, and circumstances. But a free market of health plans and individual consumers is likely to be characterized by some combination of high premiums, poor coverage (high deductibles, exclusions, and unavailability of insurance to some people) of the sick, and discrimination against them.

The sponsor's job in a system of managed competition is to structure and manage the process to prevent these outcomes. The following is an inventory of tools that sponsors can use.

Pricing—The perverse incentives in biased selection occur because the insurer cannot charge each insured a price equal to the latter's true expected medical costs (plus administration) because of either institutional requirements on the insurer or private information known to insureds but not available to insurers, or both. One important part of the successful management of this problem is to attenuate the incentives for biased selection by a system of accurate pricing. In the extreme, one could imagine a sponsor soliciting a competitive bid for a year's comprehensive care from each health plan for each insured. Then, for example, the sponsor could offer to pay the price of the low bidder on behalf of each insured, leaving it to the insured to decide whether he or she wanted to pay the extra cost to join a higher-priced health plan. Of course, the transaction costs of such individual pricing would be enormous, so practical sponsors and insurers adopt approximations that fall far short of that extreme.

The general term for these approximations is "risk rating." Persons or groups are identified by certain characteristics that help predict medical expense, and a price is quoted for insuring people in each subgroup. Risk rating can be used to accomplish two important things. First, the incentive to discriminate against the sick can be minimized by allowing the plans to charge higher prices for the care of people in categories with greater predicted costs. And second, inequity can be avoided by tying the sponsor's contributions to the costs in each category, thus protecting the sick from higher costs. Such a system does not have to be even near-perfect in order to be workable, especially when used with other incentives and contractual provisions described in this section.

The largest-scale system of risk rating now in operation is the Medicare HMO/CMP option under Section 1876 of the Social Security Act. Medicare beneficiaries are grouped by age, sex, county of residence, and welfare, institutional, and disability status, and by presence of end stage renal disease. The HMO of the beneficiary's choice is paid an amount related to what a beneficiary of similar characteristics would have cost Medicare under the fee-for-service system. Participating HMO's or CMP's must charge all beneficiaries the same price for the same benefits. The system was created to protect the government from adverse risk selection, but its most important benefit is likely to be to give health plans an incentive to serve older, sicker beneficiaries. Various critics are now finding that there is some initial risk selection against the government even within the existing set of risk adjustments (Eggers, 1980; Eggers and Prihoda, 1982). But this formula is no more than a first approximation. Better predictors of resource use can and should be developed.

In CCHP, I proposed a system of community rating by actuarial category, in which I envisioned that factors similar to those in the Medicare system would be used initially, to be follwed by a more refined system using patient-specific diagnostic information. American Airlines found that the HMO's serving its employees were benefiting from favorable age selection. So the company identified the average amounts it was paying for individual and family coverages by age and employee (by 10-year groups) and announced that it would contribute those amounts. More refined variations of these themes are possible. That more sponsors have not yet gone to sophisticated forms of risk rating may reflect the newness of the problem and the lack of research on risk-adjustment techniques, or it may reflect the relatively low perceived value of risk rating in relation to the increased cost of operating such a rating system. This is the sort of balancing that competitive markets should induce people to do.

Some researchers have noted that people who switch to HMO's tend to have used fewer health care resources in the year preceding their enrollment than others in their cohort who did not switch (Eggers, 1980; Jackson-Beeck and Kleinman, 1983). This is not surprising. It reflects the fact that people not under the active care of a physician are more likely to switch physicians than those who are. If changing health plans entails changing physicians, as is often the case at least with "closed panel" HMO's, then people under active care are less likely to change health plans. In itself, this is far from conclusive evidence of persistent favorable selection in the long run.

Other factors come into play. There is regression toward the mean—the well get sick and the sick get well or die (Blumberg, 1984; Welch, 1985). HMO's also find that their sick members stay with them while the healthy members are more likely to leave (Gold, 1981). Many other factors would need to be considered before reaching such a conclusion, but a sponsor seriously concerned about this phenomenon might negotiate for a price structure that includes a first-year discount. In other words, detection of such biases is not a reason to consider the competition strategy seriously flawed or unfeasible; it may be a reason to develop more accurate pricing schemes.

Standardized benefit packages—One of the main tools insurers can use to select risks is design of the benefit package, that is, selection of the lists of services included and excluded and the schedules of coinsurance, copayments, and deductibles. Exclude coverage of outpatient drugs, and patients with chronic conditions treated by drugs will choose a coverage that includes drugs. A relatively high deductible, with a correspondingly reduced premium, will tend to attract good risks.

The sponsor must control the benefit packages offered in order to prevent their being manipulated by health plans to select risks. In a group in which all the competitors are HMO's, the simplest and most effective way to achieve this may be to require all to cover the same standard package of basic health services. In other circumstances, however, the fee-for-service alternative may prove to be relatively more attractive to beneficiaries with stronger provider attachments. Thus, raising the deductible and lowering the premium in the fee-for-service (FFS) coverage may be an effective way to make it attractive to about the same risk mix as that attracted by the HMO's. (Raising the deductible and lowering the premium in the FFS coverage effectively lowers the price for those anticipating little or no medical expense and raises the price for those anticipating high expenses. Thus, such a change can be expected to induce some good risks to switch from the HMO to FFS and some bad risks to switch from FFS to the HMO.)

Annual enrollment process—In the successful, employment-based, multiple-choice systems like the FEHBP, there is an annual enrollment period managed by the sponsor. The beneficiaries deal with the employee benefits office, and the benefits office notifies the health plans of who has enrolled in which plan for the coming year. Usually employers manage the contacts between employees and health plans to avoid lost work time and to structure a fair competition. There are several advantages to this procedure, one of which is to deprive health plans of a tool for selecting risks. (Direct interaction between a health plan's sales representative and a potential subscriber in the process of enrollment gives the health plan an opportunity to ask questions about health status and to discourage enrollment of the chronically ill.)

Unfortunately, the Medicare HMO/CMP program and at least some Medicaid programs are configured in such a way that health plans deal directly with beneficiaries in the enrollment process. There are several important disadvantages to this procedure, including adding to marketing costs, attenuating price competition, and increasing the opportunities for health plans to select healthy beneficiaries. Even worse is the provision allowing beneficiaries to disenroll on a month's notice instead of having them be "locked in" for a year at a time as discussed in the next section. Legislation should be enacted to require the Medicare and Medicaid programs to follow the more successful procedure used in the private sector.

Continuity of coverage—Disenrollment can be as important as enrollment in the selection of risks. Sponsors must manage the process to prevent health plans from dumping bad risks, as discussed in the next section. Among other things, contracts should be written to ensure that subscribers can keep their coverage through the contract year and can renew it in subsequent years. Contracts should also provide for automatic coverage of newborns to prevent health plans from avoiding the risks of neonatal care. Indeed, continuity of coverage is an important goal in itself, beyond its implications for risk selection, and should be a basic law governing all health care coverage contracts.

Surveillance by sponsor—The general understanding between sponsors and health plans reflected in contracts between them should be that health plans will participate equitably in covering the sponsor's entire group of beneficiaries, that they will seek to provide good quality care economically, and that they will not play games to select risks. In matters so complex, there is no such thing as a perfect contract. Enduring business relationships in the private sector are usually built on such understanding and trust. Sponsors should monitor health plans' performance, watch for signs of inappropriate risk-selecting behavior, and take corrective action. Sponsors must be free to use judgment based on reasonable but less-than-conclusive evidence. Graduated responses should be available to sponsors, short of termination of entire contracts. For example, sponsors should be able to freeze new enrollments if a health plan is doing a poor job.

In theoretical writings on this subject, one finds scenarios of sophisticated risk-selecting behavior, such as patterns of systematic discrimination against the chronically ill (Newhouse, 1982.) I believe there are good reasons why such behavior does not seem to happen much in practice, at least in the employment-related sector. People come in families and employment groups. A health plan that seeks to discourage reenrollment by one chronically ill person risks losing the membership of other family members and colleagues who are healthy. And it risks antagonizing the employee benefits office. Moreover, a health plan that tried to make a systematic business practice of such behavior would risk repelling the best doctors and nurses. Such a practice would have a negative impact on corporate culture, and it would risk inspiring negative publicity by "whistle blowers." Some of these disincentives to discrimination against the chronically ill may be weaker in the market to serve relatively isolated Medicare beneficiaries than in the employment-related market. Collective action by Medicare beneficiaries may be an important part of a successful system.

A scenario that I find much more persuasive is based on the insight that a health plan's expenditures in a given year are likely to be concentrated on a few of the members. The Rand health insurance experiment found that 28 percent of expenses were associated with 1 percent of the enrollees (Newhouse et al., 1981). This suggests that a health plan could benefit by finding subtle ways to persuade its sickest 1 percent to disenroll. Picture the kindly doctor saying to the patient's family, "We aren't as well set up to take care of that kind of case as they are at a prominent fee-for-service provider; you'd get better care by switching to them." But even this is easier said than done. It is inhibited by the usual annual periods of enrollment.

But an alert sponsor who is concerned about such behavior is not powerless in the face of it. First, a sponsor should check out a health plan before offering it. And high on the inspection list should be the plan's tertiary care arrangements. If such arrangements are not adequate, the plan should not be offered until corrective action is taken. Second, sponsors should monitor disenrollments. One technique would be to ask each subscriber changing health plans to fill out a brief questionnaire indicating reasons for the change. If a pattern of inappropriate behavior emerges, the sponsor may demand corrective action. (However, the number of people involved will be small, so such a pattern of behavior may be difficult to detect.) Third, the sponsor might negotiate for a pricing scheme that indemnifies the health plan for the incidence of certain very costly cases to reduce the incentive to disenroll patients at high risk for tertiary care.

Segmentation and product differentiation

Health care coverage does not naturally come in a simple, clean comprehensive package that can easily be compared with other packages. There are endless possibilities for differentiating one package from another by including, limiting, or excluding any of a long list of specific coverages: maternity, eye care, hearing care, mental health, drugs, etc. As well as being a tool for selecting risks, benefit package design can be used to segment the market to avoid price competition and to differentiate the product in ways that make price comparisons very difficult.

As an example of market segmentation, at Stanford in the 1970's we had two prepaid health plan alternatives, Kaiser Permanente and a prepaid health plan based on the Palo Alto Medical Clinic. The Kaiser plan covered normal maternity while the other did not. Scitovsky, McCall, and Benham (1978) found that there was a strong association between income, location of residence, and choice of plan. So the market was segmented to begin with. But this difference in coverage tended to divide the families into those planning or expecting pregnancies and those not, thus further segmenting the market and attenuating price competition. That is, this segmentation reduced the number of people who would seriously consider both plans and modify their choice in response to a change in price.

A market of CMP's is particularly easy to segment because health care is largely a locally provided service. It is more difficult, for example, to segment the market for small cars in Palo Alto because cars are shipped there from locations as distant as Japan and Germany. But only about four or five HMO's conveniently serve the residents of Palo Alto.

Such segmentation can be characterized as catering to different bundles of tastes and therefore may be utility-increasing. But it comes at the expense of price competition. If the sponsor wants to increase the focus of competition on price, a good strategy is to contract with the different health plans to offer identical or very similar coverage. This still leaves ample opportunity for differentiation by system and style of care. Anything that inhibits people from changing health plans at the periodic enrollment attenuates competition. Exclusion of coverage for preexisting conditions is such a practice.

A related problem is opportunistic risk selection by patients—switching plans from year to year because of changes in expected medical needs. One proposed response to this problem is to deter such switches by rules or by taxing them. But the trouble with deterring plan switches is that this attenuates price competition. Preventing opportunistic risk selection without deterring annual change of plan is another reason to require that all coverages be equally comprehensive. And it is a reason for believing that a successful model of annual choice should not offer choices that cater to differing degrees of risk aversion. For example, the offering of high and low options—long a practice in the FEHBP—is a serious error in the design of a competitive system. It is an open invitation to opportunistic risk selection and can lead to instability in the marketplace as adverse selection drives up the price of the high option. If one carrier offers both a high and a low option, as in the FEHBP, cross-subsidies from one option to the other might attenuate this instability. But this would simply invite another carrier to offer the same low option at a lower price.

I believe the net of these considerations will lead most sponsors to favor a strategy of contracting with health plans to offer substantially the same coverages and to make them compete on the basis of price and perceived quality of care and service.

Information cost

At best, health care coverages are complex and difficult to understand, evaluate, and compare. Insurers can make it worse if they are free to do so. It is difficult to write contract language that cuts cleanly through the ambiguities of medical need and practice. This fact can impair the efficiency of the market. If the sponsor does not contract for coverages that are easily compared, people will find it very costly (in terms of their own time) to achieve a sufficient understanding of the different plans to enable them to choose with confidence. When they find an alternative that seems satisfactory, they will be deterred by the "information cost" from considering other alternatives.

A sponsor who wishes to use competition to improve the welfare of the sponsored population can contract for coverages that are easy to compare. In addition, the sponsor can gather and publish information that facilitates comparison and improves consumer understanding. Examples might include surveys of the sponsored population to report what consumers do and do not like about the various health plans, along with surveys of people who switch away from health plans explaining why they changed. Economies of scale would be realized if a group of sponsors, such as an employer coalition, developed such information.

There is concern about costly and abusive marketing that seems to occur in the Medicare and Medicaid markets. The Southern California prepaid health plan scandals of the early 1970's were marked by reports of door-to-door salesmen in white coats misrepresenting services. This kind of problem seems to occur much less or not at all in markets that serve private sector employees. I believe such problems can be minimized by the sponsor managing the enrollment process and providing good information to the beneficiaries.

I have mentioned several reasons for a sponsor to require all participating CMP's to offer a standard benefit package—to counter risk selection and segmentation and to reduce information cost. I believe these reasons create a strong presumption in favor of standardization. But there are also valid reasons for departing from a standard package. At Stanford, we have adjusted the deductibles in our fee-for-service preferred provider coverage to reduce the premium and make it attractive to a similar mix of risks as the HMO populations. And a sponsor might want to allow a CMP to offer an innovative benefit that was attractive to some members of the covered group, without selecting risks, but that the other CMP's were unwilling to offer. I doubt that allowing those willing to cover chiropractic to do so would cause significant biased selection. The bottom line of this issue is that the sponsor should control and adjust the benefit packages for the benefit of the covered population and should not allow the health plans to select the coverage they offer for purposes of risk selection and segmentation.

One of the central ideas of the competition strategy is the CMP that links providers and coverage so that the provider community is divided into competing economic units. A sponsor can enhance competition by adding health plans that add provider groups to the competition. Numerous PPI plans, individual practice associations (IPA's), and conventional, "free-choice" coverages that offer virtually all providers in a community do not create or add to competition in this sense. Adding more such coverages adds to consumer information costs and increases opportunities for risk-selection games without enhancing competition. Thus, I do not believe that all the duplicative, fee-for-service, free-choice coverages in the FEHBP make that program more competitive in the sense of improving the efficiency of health care delivery.

Discontinuity of coverage

In a free-market situation, insurers would seek to drop coverage of people with chronic diseases as soon as the contract period expired or to raise the price of coverage to reflect the patient's new condition. The latter might be an equity problem, as discussed in the "equity" section. The former creates a problem of discontinuity of coverage. Some insurance plans have tricky exclusions, "air pockets" such as no automatic coverage of newborns, that people do not notice until they are in need. The sponsor can negotiate contract terms that provide for continuity of coverage, including clear provisions regarding coverage of dependents. Such action by the sponsor can reassure the insureds that they can switch plans without fear that the new plan will have some tricky exclusions they did not see.

Free riders

As experience in the free-market segment of the U.S. health care economy shows, a free market is likely to lead to the noncoverage or undercoverage of large numbers of people. The insurers do not want to insure people with greater-than-average risks for the price of average risks, and some people with below-average risks do not want to buy insurance at prices appropriate to average risks. The possibility of risk rating has not solved this problem. If permitted to do so, many consumers will seek a free ride and wait to buy insurance until they become sick. Thus, insurers must adopt elaborate strategies to prevent free riding. In fact, most insurance companies have withdrawn from the market for individual unsponsored coverage. What remains is poor coverage at high prices.

The sponsor can use various tools to achieve universal coverage within its group. Usually coverage is not optional, in the sense that individual members can take the money that would have been spent on their coverage and spend it on something else. For example, many employers offer a substantial subsidy usable only as a contribution toward the premium of a contracting plan, thus giving even the healthy an incentive to insure. In addition, the employer may provide for automatic enrollment in the cheapest plan for all eligible group members who do not make a choice.

Equity

In a free market, without countervailing rules or sponsors, people with chronic diseases would find themselves paying, through premiums or out of pocket, the extra costs associated with their illness. Health plans would want to charge each person a premium sufficient to cover his or her expected medical cost plus administrative cost and profit. This would produce a situation that many would consider inequitable and contrary to the spirit of social insurance. Generally speaking, health insurance, as we and the other democracies know it, entails those who are well bearing most of the costs of those who are sick. Yet as explained earlier, allowing health plans to charge more to care for predictably sicker people is probably necessary to prevent discrimination against the sick and to take away an important incentive for risk selection. Sponsors can resolve this conflict by adjusting the subsidies to the predicted need of each class of beneficiary. Thus, a central idea of the competition strategy is to shift the locus of cross-subsidies of the sick by the well from the health plans and hospitals to the sponsors. In competition, health plans and hospitals cannot be expected to cross-subsidize. For to the extent that they tried to charge low-cost patients more in order to subsidize high-cost patients, other health plans and hospitals would offer lower prices to cover or care for low-cost patients and take away the source of the subsidies. In effect, many sponsors have been cross-subsidizing within their groups for years by buying experience-rated insurance for their groups.

Quality

Some aspects of quality of care and service can be judged adequately by individual patients and their families. But some very important aspects, such as whether effective medical care makes sick patients better, are statistical matters that can only be judged on the experience of large populations. This is a very undeveloped area, but one in which large sponsors have a much better chance than unaffiliated individuals to develop or obtain the data to evaluate quality.

Even without sophisticated quality measures, complaints can inspire the benefits manager to confer with the health plan about ways to improve service. In the case of the Medicare program, complaints to members of Congress obviously can inspire high-level attention. There are at least several things, short of refusing to renew the contract, that the benefits manager can do about a health plan giving poor service. The list would include: (1) warning beneficiaries about patterns of complaints; (2) suspending all new enrollments in a plan, or suspending all new enrollments in a particular area or category (e.g., in an area where service appears poor); or (3) possibly allowing those who are dissatisfied to leave a plan in midyear. (This would have to be managed carefully to prevent abuse.) Ultimately, to be effective in negotiating for quality improvements, the sponsor must be free not to renew the contract without being tied up in court for years.

The whole area of quality assurance is too large and complex to be discussed here. Let me mention a few key points. First, a competitive market will not automatically produce high-quality care. Suppliers to a competitive market seek to produce what the purchasers want. If the purchasers do not measure and demand good-quality care, there is little reason to expect they will get it. It is hard for consumers to judge the technical quality of care. The great majority do not repeatedly experience major episodes of care that might help them to become experienced consumers. Consumers need help in judging which providers have good batting averages and which do not. Thus, quality evaluation is an appropriate role for sponsors. McClure correctly emphasizes the importance of concerned purchasers and coalitions of purchasers "buying right," that is, buying for quality and efficiency and not just for discount prices. (McClure, 1985a and 1985b).

Second, for a sponsor to do a good job of quality evaluation, it must have data. Public sector sponsors also need data to satisfy demands for accountability in the use of public funds. This article is not the place to recommend a complete data set. But an illustrative list of what a sponsor might reasonably want to know might include the following: some data on the health status of the sponsored population (for example, to serve as a basis for risk-adjusted pricing); some data on treatments and risk-adjusted outcomes; hospital use by diagnosis; physician encounter data (to evaluate access and to review how certain types of patients are treated); and details on who disenrolls and why. Data are costly to collect, provide, and interpret. So I do not mean to endorse blanket unilateral demands for large amounts of data that might amount to little more than a fishing expedition. Each demand should be justified on its own merits with benefits balanced against costs. But if sponsors are buying a service, they have a responsibility to figure out what it is they are buying and whether their beneficiaries are receiving it.

Entry barriers and procompetitive action

Finally, the presence of even several health plans in an area does not guarantee that competition will be lively. The market may be segmented, or a pattern of "live and let live" may evolve. Potential new entrants to a given market, such as national HMO firms, may perceive that the costs of entry are high because to succeed they would have to take patients away from established HMO's and not just the unorganized fee-for-service sector. Sponsors so inclined can act to encourage entry of new competitors in cases in which they consider the existing degree of competition to be inadequate. A group of employers could together invite an HMO company to open a branch in their area and could promise support in the enrollment process. Such invitations influenced Kaiser-Permanente's decisions to enter several markets.

In sum, as critics of the competition idea point out, many serious failures would be likely to occur in a market made up of health plans and individual consumers unprotected by rules and unaided by sponsors. But we have seen large group buyers, such as the Federal Office of Personnel Management, the State of California's Public Employees' Retirement System, the University of California, Stanford University, and a number of large industrial employers, structure workable models of competition and manage them successfully, some for 25 years. These organizations have done so without using all the tools I have described. If large buyers have the motivation, the freedom, and the understanding to use all of these tools and to develop new ones, it seems reasonable to suppose that an efficient and equitable health care system will evolve to serve sponsored populations. But such good results will not occur automatically. This is not a market in which the invisible hand will do the job. Some visible hands, which I call sponsors, must manage the demand side to make the market achieve desirable results.

Sponsors

The concept of managed competition puts a heavy burden on sponsors. Who are sponsors? Who is equipped to carry this burden? Today, the main sponsors are government, large employers, unions, and labor-management health and welfare trusts. The Federal Government sponsors Medicare beneficiaries, Federal employees and their dependents, military personnel and their dependents, and various other population groups. State Medicaid programs sponsor Medicaid-eligibles, etc. The ideal sponsor would be well equipped for these tasks and would be motivated solely by the goal of obtaining the most high-quality health care possible for the beneficiaries within the funds available. Who should be the sponsors? There is a great deal of ideology on both sides of the question as to whether the public sector or the private sector ought to do the sponsoring, and if it be the public sector, whether it should be a Federal or State responsibility. The record is mixed. There is no ideal sponsor. There is much room for innovation in developing institutions for this purpose.

Public sector agencies are often criticized for their inflexibility, for the inability of their managements to use judgment because of the constraints of administrative procedures acts, the requirements to treat everyone equally and with due process, and procurement laws. Legislatures are vulnerable to provider pressures. For example, they mandate coverages for the economic benefit of provider groups. Until 1982, the whole Medicare program was shaped by provider insistence on the guild free choice model. The loyalty of the Federal Government is naturally divided. Providers make campaign contributions too. Because of the well-focused pressures of organized provider groups, HCFA cannot single-mindedly pursue the best interests of its beneficiaries, however much its managers would like to. Government is often criticized for the short-term orientation of its elected leaders and for substituting symbolic manipulation for real reform (Mayhew, 1974). Moreover, government is often an unreliable business partner; it must make sudden budget cuts and break contracts in response to changes in public mood.

However, despite these problems, the record of the public sector as sponsor is not bad. Medicare's HMO/CMP option has the most accurate and refined risk-rating system in operation, and its design has many other features of a good managed-competition model. HCFA has been the leader in research, demonstration projects, and data development. For many years, the FEHBP and the similar health benefits plan of the State of California's Public Employees' Retirement system have been among the best-designed and most successful examples of competitive health coverage systems. Both could doubtless benefit from design improvements. But overall they have been successful in offering beneficiaries a range of cost-conscious choice, in encouraging new CMP's to enter their markets, and in managing to moderate many of the problems I have identified as threats to a successful competitive model. However, for their first 25 years of operation, both had to work in a market of excess demand for providers' services created by the guild free choice system. By themselves they did not and could not be expected to create a competitive health care economy. But they made important contributions to that development.

Private sector employers also suffer from limitations as sponsors. Most are too small and lacking in resources to do the job I have outlined. Employers lack interest in continuity of coverage. They exclude coverage for preexisting conditions, and they drop coverage for employees who leave the group, unless they are forced to maintain it by law or a collective bargaining agreement. Some employers manipulate the system for short-term advantages, for example, by seeking to dump bad health risks onto community-rated plans. Most employers, even large ones, are oriented mainly to short-term profits. The priorities of their managements have to be in their own product markets, not in promoting the health of employees. Many benefits managers have a poor understanding of health issues. And long-term issues of health economics can easily be subordinated to politics within unions and between employers and unions. While we have some fine examples of large benevolent employers, even devoted private sector advocates must admit that most employers have a long way to go to achieve the role of ideal benevolent agents for the health care of employees.

There is a need for innovation in sponsor institutions and in public policy to guide private sector sponsors in socially responsible directions. For example, the continuity-of-coverage provisions in the Consolidated Omnibus Budget Reconciliation Act of 1986 were a significant step toward ensuring people the opportunity to maintain coverage even after they lost membership in the sponsored group. Some people may be concerned that making employer cross-subsidies explicit would motivate companies to avoid hiring or to dump older employees. Most companies have experience-rated insurance or they self-insure, so they have been paying the extra costs of older, sicker employees for years, and this problem has occurred but has not been severe.

The Federal Government subsidizes the coverage of employed people through the tax system. Various proposals have been made to modify the form of these subsidies in the interests of incentives reform and equity. If discrimination against older employees because of health care costs were a serious concern, one policy to help correct this would be a system of risk-rated Federal subsidies for everyone's health insurance. In other words, instead of subsidizing people's coverage on the basis of their employer's contribution and their marginal tax rate, as is the case today, the Federal Government might subsidize coverage using factors analogous to the Medicare adjusted average per capita cost factors. Many of the shortcomings of private sector employers might be substantially ameliorated by the development of employer coalitions or "community buyer systems" such as the Minnesota Coalition on Health Care Costs (Kenney, 1985).

The ability of HCFA to serve as a sponsor for Medicare beneficiaries could be enhanced by legislative changes granting it greater authority to negotiate, use judgment, and to make graduated intermediate responses to shortcomings in the HMO's and CMP's that serve Medicare beneficiaries. And some of the inevitable shortcomings of HCFA might well be compensated by developing local health care cooperatives that would gather and publish evaluative information on competing health plans (Firman, 1985). Developing such cooperatives would be a worthy object of support by foundations and HCFA demonstration project funds.

In theory, a managed-competition system could be sponsored either by public or private sector sponsors, or by some form of public-private partnership. In CCHP, I proposed that the system be managed either entirely by the Federal government or by the States acting under Federal standards as do the provinces in Canada. In part, this was because CCHP was a response to ex-President Carter's promise to establish a national health insurance system. I attacked the present job-related system of health insurance on a number of grounds, especially that it excludes millions of people, adds greatly to the costs for new health plans to enter a market, and adds greatly to administrative cost and complexity (Enthoven, 1978 and 1980). Europeans interested in managed competition will naturally think in terms of government as sponsor. But I see no present prospect of our society abandoning the job-related system. Its worst consequences could be alleviated by estalishment of public sector "sponsors for the unsponsored" to move toward universal health insurance as discussed later in the "people without coverage" section. And study of the European and Canadian systems has impressed me with the rigidity of centralized government systems. There are advantages in a decentralized system of sponsors.

Decisions about levels of coverage need to be made collectively, but they can be made at the level of sponsored groups and do not need to be made nationally. A decentralized approach leaves room for innovation, experimentation, and adaptation to local conditions.

Who needs this message?

I believe the concept of managed competition needs to be understood better than it is now by at least four groups of people.

Free-market and voucher advocates

Advocacy of free-market and voucher approaches in health care, education, and elsewhere is popular these days. And the ideas of consumer choice and competition obviously have much to recommend them. But advocates of these ideas should consider carefully the specific institutional features of each market. In particular, they should look to patterns of successful competition for their model of a competitive health care economy rather than to naive, untested models that pit unaided consumers against health plans in a free market. Such models are bound to be ineffective; people who understand health insurance and health care know they cannot work.

Economists

An economist is someone who tries to prove that what works in practice also works in theory, except in health care. Some health economists seek to prove that what works in practice cannot work in theory.

A potentially valuable function of economic analysis is to help us understand what works, why it works, and how successful arrangements can be extended to cover more people. Despite the theoretical literature on why competition cannot work, we have some large-scale, long-term examples of practical success in competitive health care arrangements. While imperfect in their designs, programs like the FEHBP and the similar program for California State employees have not been destroyed by biased selection or segmentation, nor have they been marked by discrimination against the sick. Economic analysis can suggest design principles and useful management tools to make competitive arrangements work more effectively.

Employers

Many employers, though large-scale purchasers of health care, have been uninvolved, uninformed, and surprised by the appearance of such problems as biased selection. Employers in some communities have continued in the employer-pays-all mode and then expressed surprise that competition was not lowering costs. This situation is changing. Reflection on the reasons for managed competition should help employers form an agenda for action. Understanding managed competition should help them understand the active role they must play and some of the tools available to them. As noted earlier, competition will not automatically produce good-quality, cost-effective care. As McClure argues so persuasively, that will only occur if employers "buy right" (McClure, 1985a and 1985b).

Governmental agencies

To get the most health care for the beneficiaries from the available funds, HCFA's role needs to be recast from managing an insurance program to sponsoring beneficiaries in a competitive market, as already discussed. HCFA's procedures should be modeled on successful designs in the FEHBP and the private sector. For example, in each market area there should be a single, coordinated, open enrollment managed and run by HCFA or a local broker agency contracting with HCFA. HCFA should produce or contract to have produced useful information for consumers. Communities and senior citizens' groups should become involved. States should follow similar principles.

Unfinished business of the competition agenda

Sometimes I am asked, "Now that competition is here, are you satisfied with the result?" I answer, "It isn't and I'm not."

Competition is coming, and we can see some encouraging changes in national expenditure trends. For example, hospital use and hospital employment have declined markedly since 1983. Declining rates of cost increase and even some premium reductions reflect these changes. But it would be impossible to sort out how much of this is attributable to competition as opposed to other factors, such as the Medicare prospective payment system (PPS) and fee freeze, physician and hospital bed surpluses, and tougher employer stances on benefits and utilization. Here are my specific comments on the state of the U.S. health care economy from the competition perspective.

Competition is not here yet

The number of people enrolled in CMP's has been growing rapidly, but as of mid-1986, it stood at roughly 30 million or around 12 to 13 percent of the population. The process has a long way to go.

One principle of the competition strategy is cost-conscious choice. Those who choose a health plan that costs more on a risk-adjusted basis should have to pay the extra cost with their own net-after-tax dollars. Those who generate savings by making economical choices get to keep those savings. This principle is not yet widespread. While the situation is changing rapidly, many employers who offer choices of plan still pay the full price of coverage, at least up to the level of premiums for tradtional coverage. This puts the health plans under no pressure to hold down their prices. This employer practice grew up in part because of collective bargaining and in part because of the open-ended exclusion of employer contributions for health benefits from the taxable incomes of employees (Enthoven, 1984). The May 1984 Internal Revenue Service (IRS) ruling on "cafeteria plans" under Section 125 of the Internal Revenue Code enables employees to have what are in fact their contributions to their health care coverage characterized as employer contributions and to have them paid with pretax dollars (Enthoven, 1985). The effect is that, at the margin, upper-income groups can buy an additional dollar's worth of health benefits at a cost in after-tax income of only 65 cents or less.

To correct this, we need to limit the amount of employer contributions that can be tax-free to the employee, as has been proposed in several bills introduced in Congress.

Medicare remains largely a fee-for-service system, even under prospective payment. That is, it pays physicians more for doing more, whether or not more is beneficial to the patient. The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) defined a far better model for Medicare, one in which the government contributes a fixed prospective payment to the HMO or CMP of the beneficiary's choice based on the expected cost to Medicare of each beneficiary. Thus, at least to a good approximation, the government makes a risk-specific contribution, and the patient's contribution reflects the efficiency of the health plan. As enacted in 1982, this HMO/CMP option has some deficiencies. Eventually, Medicare capitation payments need to be phased to a national uniform amount, adjusted for local area wages, as in PPS. With some corrections, this would clearly be the best model for taxpayers and patients. Capitation payments are vastly easier for the government to control. And the per-capita mode of payment allows the beneficiary to benefit from an economical choice. The government would be wise to encourage the rapid implementation of this option on a "managed-competition" basis.

People without coverage

Traditionally hospitals were charitable institutions created to serve the poor. Most of them still enjoy tax exemptions. And traditionally doctors gave free care to the poor. The enactment of Medicare and Medicaid reduced dependence on charity care. But still, 10 years after their enactment, large numbers of people were without public or private coverage for health care. Farley estimated that in 1977, about 9 percent of all persons under 65 years of age went all year without coverage, while an additional 9.4 percent went part of the year without (Farley, 1984). The total number without coverage on any given date is uncertain. But it appears to be at least roughly 30 million.

Lack of coverage has meant lack of care (Davis and Rowland, 1983), in some instances, and reliance on uncompensated, i.e., charity and bad-debt care provided by doctors and hospitals in others. For example, Sloan, Blumstein, and Perrin (1986) estimated that hospitals provided $6.2 billion in uncompensated care in 1982.

Hospitals were able to do this in the guild free choice era because they could raise their charges to insured patients by enough to cover the cost. But they will not be able to do this in the era of PPS and competition. Competition systematically attacks such cross-subsidies. Cost-conscious buyers shop for the lowest price. If a hospital seeks to load extra charges into its prices to cover uncompensated care, it will lose business to other hospitals that do not. Increasingly hospitals find that under PPS, selective contracting by Medicaid, and CMP's, nobody is willing to pick up the tab, and financial survival comes to depend on avoiding patients who lack coverage. This motivates development of many techniques for reducing the number of nonpaying patients and for promptly transferring those who do get through to the county hospital. At the same time, the county hospitals are financially strained.

Thus the elimination of cross-subsidies via competition is a bad deal for the uninsured sick poor, who are already burdened enough by their sickness and their poverty. And it is a bad deal for the rest of us. In many cases, early care denied means a greater burden of late care. And since many of the uninsured are in households in which the head does work, at least part-time, lack of care can mean reduced ability to work, pay taxes, and support the family. Many who are insured today may not be so fortunate in the future.

The insured have two things the uninsured do not have—subsidies and sponsors. As noted earlier, the great majority of insured people 65 years of age and under have tax-subsidized, employer-sponsored coverage. Ginsburg (1982) estimated that in 1983, the tax benefit per household from the exclusion of employer contributions from the taxable incomes of employees was $622 per household in the $50,000-to-$100,000 income range, and $83 per household in the $10,000-to-$15,000 range. This was in part because average employer contributions were nearly five times as large for the former as for the latter. I recently estimated that the tax subsidy for employer-paid health insurance has a potential to cost the Federal budget roughly $50 billion in 1986 (Enthoven, 1985). The great majority of this tax subsidy goes to households with incomes above the median. If the justification for this tax subsidy is to promote the wide spread of health insurance, just the opposite relationship to income would make more sense. That is, subsidies should be larger for lower-income people, whose decisions to insure are likely to be more influenced by the cost. Upper-income people will generally want to insure even without subsidies.

This situation would be substantially improved by enactment of the Health Equity and Incentives Reform Act recently introduced by Senator Durenberger (Durenberger, 1986). That bill provides for limited subsidies, independent of income, for health insurance for all people, whether employed or not. In addition, we need to create tax-subsidized sponsor agencies, probably at the State government level, to sponsor health coverage for people who are not sponsored by their employers or an existing public program.

Fleming's and my original competition proposals were for universal health insurance with subsidies and government-sponsored coverage for everyone. In view of the predictable effects of competition on cross-subsidies within hospitals and health plans, we did not consider that competition would produce acceptable results except in the context of health care coverage for everyone.

Need to organize the system

The full benefits of competition will not be achieved until the competing health plans become systems organized to produce quality and economy. Preferred provider insurance is a useful transition step, but it does not organize the system. For the most part, it just discounts price and imposes some utilization control.

Organized systems can do many things with greater quality and economy than unorganized individual providers selling discount medicine. First, organized systems can match resources used to the needs of the population served. For example, they can employ just the right numbers in the surgical specialties for full operating schedules. One of the negative consequences of an excess of surgeons in the fee-for-service sector is likely to be reduced proficiency because of reduced caseloads. Second, organized systems can more easily arrange care in less-costly settings such as home and surgicenters. By doing so, the "no care zone" that can threaten patients discharged early can be avoided. Third, organized systems are better placed to evaluate and control the use of technology. Doctors in such systems can look to their peers for recommendations on drugs and other new technologies. Fourth, organized systems are better placed for the efficient use of paramedicals and other support personnel.

Organized systems are growing. Hospital staffs made up of independent doctors are becoming more cohesive. However, this development will take time.

Developing quality cost-effective medical practice

Medical practice in the open-ended era—that is, medical practice as we know it—was not characterized by careful, disciplined evaluation of benefits versus costs and risks. There were, and are, wide variations in practice patterns and not much gathering of evidence as to which patterns best balance benefits, risks, and costs. Literature on systematic medical decisionmaking was practically nonexistent as recently as the late 1970's. New methods of evaluation and analysis are developing rapidly. But they are still largely the property of a few in academic medicine. It will probably take another generation before much of this finds its way into medical practice. Managed competition can be expected to increase the demand for evaluated medical care.

Risk-adjusted monitoring of outcomes—that is, a fair assessment of the medical outcomes produced by different providers—is in its infancy. Blumberg (1986) recently reported he could find only one such system in actual operation. Organized systems serving defined populations offer the opportunity to develop outcome monitoring and systematic action to correct deficiencies. The potential is large. One may hope that eventually market forces driven by quality-conscious buyers will energize this development and that good quality-assurance systems will be translated into competitive advantage. As previously noted, that depends a lot on the sponsors.

Support for medical education

In the open-ended era, the extra costs of graduate medical education and some clinical research were reimbursed through cost-unconscious systems of payment for patient care. Cost-conscious competition attacks such implicit cross-subsidies. Increasingly, cost-conscious payers are willing to pay only the costs of efficiently delivered care. Medicare PPS includes reimbursement for Medicare's share of the costs of graduate medical education, but Medicare cannot be the sole support of this activity. Our society needs a stable, long-term policy for the support of graduate medical education that is systematically responsive to the Nation's medical personnel needs. A program of vouchers for graduates of approved medical schools usable at approved residency programs of their choice would seem most likely to assure this (*Commonwealth Fund*, 1985).

Development of competitive systems of health care delivery has largely bypassed the academic medical centers. These institutions are not set up to be cost-conscious providers of service. With few exceptions, we lack good models illustrating how academic medical centers can participate in the competitive system. I believe that the responsibility for developing innovative approaches lies primarily with the academic medical centers. But supportive public policies may also be needed. Academic medical centers are a very important part of our medical care system. The 332 non-Federal, short-term, teaching hospitals affiliated with the Association of American Medical Colleges admit about 20 percent of all patients hospitalized in the United States (Colloton, 1982). And of course they train most of our future doctors. It would be helpful to the cause of economy in health care if these future doctors were exposed to cost-conscious patterns of care.

Need for an efficient transition

Efficient comprehensive care organizations can take care of their enrolled populations with roughly 1 doctor for 800 people. (Adjustment for age distribution would not change this much.) Our national supply is heading for about 1 for 400 (Tarlov, 1986). Some specialties are in considerable oversupply, and their residency programs continue to turn out more. From the point of view of the general public, the increased supply of physicians confers several advantages. It has improved access to physician services. It has helped to break the guild free chioce cartel by increasing the incentive for doctors to contract with CMP's. It has increased availability of doctors in less well-served areas. And increased supply, combined with cost-conscious demand, can be expected to reduce the price of physicians' services.

But McClure (1985a and 1985b) correctly warns of possible harmful consequences. Physicians in excess supply may be tempted to stop referring patients to other specialists because they need the fees themselves. Specialists in excess supply may not see or treat enough cases to maintain proficiency. Some physicians may be pressured to make up for low prices by increasing volume of services beyond the point that is best for patients' health. There really can be too many doctors from the viewpoint of quality care.

Many compensatory mechanisms will come into play. Not all physicians will be practicing in efficient organizations. Doctors are the gatekeepers of the health care system. They can take back work they have delegated. When well-trained general internists can be hired for, say, $40,000 per year, it will make less sense to substitute so many paramedicals for doctors. Many physicians will find useful occupations outside of patient care. Lower incomes and the perception of oversupply will reduce the number of applicants to medical schools.

Market forces may work to produce a satisfactory outcome, but there are reasons to be less than fully confident of this. Parts of the market, such as places in medical schools and residency programs, seem to be quite immune to market forces. Lead times in the production of physicians are very long. Some physicians entering practice in 1987 will have entered medical school in 1978, when market conditions were very different. And people make large investments in specialized expertise that is not readily transferrable to other occupations. Excess supply may drive physicians' incomes below their long-run equilibrium levels and below the levels needed to attract medical school applicants of high quality.

McClure recommends that sponsors "buy right" so that good-quality, efficient doctors prosper while others are induced to retire. In addition, support for residency positions should be directed to the students rather than to the teaching hospitals. The market for residency positions should be student-demand-driven rather than supply-driven, because the students are the ones at risk if there is excess supply in the specialties they choose. Finally, the medical education establishment has become too large for our country's needs. Some reduction in medical school capacity would now be timely.

At about 4.4 short-stay beds per 1,000 population, we have roughly twice the number of beds that would be needed if everyone were cared for by an efficient, organized system. The national occupancy rate fell to about 62 percent in the last quarter of 1985, considerably below the rate that corresponds to efficient operation. A shakeout is bound to occur as Medicare PPS and cost-conscious demand meet the excess supply. For-profit hospitals are likely to shut down when their managements project that the cashflows they can earn are likely to stay below what the same assets could earn in other uses. But many nonprofit hospitals with long traditions of community support will struggle to survive. I think it is likely that health plans will find it in their interests to contract with the best hospitals and that market forces will sort this out. But community leaders ought to encourage mergers and consolidations leading to reduced capacity and redeployment of facilities into other uses. Governments and foundations ought to resist pleas for bailouts of unneeded hospitals, or they should make their assistance contingent on plans to reduce and redeploy capacity into needed uses.

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